

**VISITORS PERCEPTION OF ENVIRONMENTAL IMPACT
INDUCED BY TOURISM AND THEIR WILLINGNESS TO PAY TO
PRESERVE ENVIRONMENTAL CONDITION AT MU KO
CHUMPHON NATIONAL PARK**

by

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A thesis submitted in partial fulfillment of the requirements for the
degree of Master of Science in
Natural Resources Management

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Thailand
December 2012

Acknowledgement

I would like to express my deepest gratitude to my supervisor, Dr.Damien Jourdain for all his guidance, patient and support during the entire process of the research work and during my time abroad in Sweden. I would also like to thank Dr. Rajendra Shrestha and Dr. Clemens Grunbuhel, examination committee for their valuable advice, support and comment during the research study.

I'm thankful to all the staff at the School of Environment, Resources and Development (SERD): natural resources management department field of study (NRM), particularly to Mrs. Yupa, Mrs. Sumalee and P, Nikorn for their tremendous help and support throughout my entire study time at AIT. Special thanks also go to Mr. Vitoon Nil-Ubol for taking the time to guide me through some statistical analysis lesson.

I would also like to thank all the officers and staff at Mu Koh Chumphon National Park (MCNP) for their co-operation and permission to conduct this research study, especially for giving me an accommodation during my data collection period.

I would like to extend my sincere gratitude to Royal Thai government for partially support funding of my study and give me the opportunity to study at AIT. Also my deepest acknowledgement and gratitude to European Union, Erasmus Mundus: MAHEVA program for offer me once in a life time experience to study and explore Europe. I'm indeed truly grateful for that memorable experience in my life.

I'm thankful to all of my friends who help and support me during both good and difficult times in AIT, especially my good friends Ali, Lok, Noi and others.

Lastly but most importantly I would like to thanks my family again for everything in life.

Abstract

Mu Ko Chumphon National Park has been recognized as one of the most pristine national park in Thailand. Currently the park has not been well recognized yet among mainstream tourism. The study put a preliminary effort to investigate visitor characteristic, perception and WTP through questionnaire survey. A very high percentage of first time users and the willing to return rate indicated that visitor at MCNP would likely increase in the future. Visitor perception on environmental impact related issues of the park were analyzed. Interestingly, socioeconomic variables in age, income and education have no effect on perception regarding visitor evaluation and concern level of the park but the duration of stay shows a strong relation. Moreover, it was evident from the study that many visitors were not aware that their own presence can cause impact to the park. The study revealed conflict behavior that although most visitors would come for experienced nature features of the park and valued less crowded experience but many of them also demand more facilities building inside the park especially in group of visitor with low education level. In addition, we found that WTP of visitor was strongly influenced by variables of confidence level in authority& project, ages and origin of visitor.

Keywords: visitor perception, visitor characteristic, willingness to pay (WTP), environmental impact, conflict behavior, National Park

Table of Contents

| Chapter | Title | Page |
|----------|---|-----------|
| | Title Page | i |
| | Acknowledgements | ii |
| | Abstract | iii |
| | Table of Contents | iv |
| | List of Tables | vi |
| | List of Figures | vii |
| | List of Illustrations | viii |
| 1 | Introduction | 1 |
| | 1.1 Background/Rational of the study | 1 |
| | 1.2 Statement of the problems | 2 |
| | 1.3 Objective and Research question | 3 |
| | 1.4 Scope of study | 3 |
| | 1.5 Conceptual Framework of the study | 4 |
| 2 | Literature Review | 5 |
| | 2.1 National Park and Tourism | 5 |
| | 2.2 National Park in Thailand | 6 |
| | 2.3 National Park and Tourism related issues in Thailand | 6 |
| | 2.4 Visitor impact related issues in National Park | 8 |
| | 2.5 Perception of environmental impact | 9 |
| | 2.6 Economic Valuation | 11 |
| 3 | Research design and Methodology | 15 |
| | 3.1 Profile of study site: Mu Ko Chumpon National Park | 15 |
| | 3.2 Research design and data collection method | 17 |
| | 3.3 Sample area and size | 18 |
| | 3.4 The contingent valuation method design | 18 |
| | 3.5 Data analysis | 19 |
| | 3.6 Rationale for methods selection | 23 |
| 4 | Results and Discussion | 24 |
| | 4.1 Visitor characteristics at MCNP | 24 |
| | 4.2 Visitors perception about environmental impact | 28 |
| | 4.3 Factors influencing visitors' perception regarding environmental impact issues | 32 |
| | 4.4 Factors influencing visitors' perception about entrance fee issues | 34 |
| | 4.5 Factor influencing visitor perception regarding Importance of small number of visitor and facilities Provided at the park | 37 |
| | 4.6 Visitor willingness to pay | 38 |
| | 4.7 Discussion | 42 |
| 5 | Conclusion and Recommendations | 46 |
| | 5.1 Conclusion | 46 |

| | | |
|-----|-------------------|-----------|
| 5.2 | Recommendation | 48 |
| | References | 51 |
| | Appendices | 58 |

List of Tables

| Table | Title | Page |
|--------------|---|-------------|
| 1.1 | Conceptual Framework of the study | 4 |
| 2.1 | Annual Visitor number in selected national park | 5 |
| 2.2 | Visitor number in National Park of Thailand compare to total tourist number in Thailand | 7 |
| 2.3 | Sustainable tourism objective of Thai national park | 8 |
| 2.4 | Comparison between Travel cost and CV method | 14 |
| 3.1 | Types of visitor and Visitor activities in MCNP | 16 |
| 3.2 | Annual visitor number during fiscal year from 2006-2010 | 16 |
| 3.3 | Compare annual number of visitor between some major National park destination in Thailand with MCNP | 17 |
| 3.4 | Proportion of age and gender in sample size | 18 |
| 3.5 | Definition of variable in statistic analysis | 22 |
| 4.1 | Visitor's number of visit to MCNP | 24 |
| 4.2 | Duration of stay | 24 |
| 4.3 | Visitors' accompany | 24 |
| 4.4 | Area visited by visitor at MCN | 25 |
| 4.5 | Visitor demographics at MCNP | 27 |
| 4.6 | Weight average index of different factors for visiting MCNP | 27 |
| 4.7 | Perception regarding visitors' presence and environmental impact | 28 |
| 4.8 | Weight average index of concern future tourism impact from visitor | 29 |
| 4.9 | Different impacts visitor noticed during their stayed at MCNP | 30 |
| 4.10 | Visitor opinion on construct more visitor facilities at MCNP | 31 |
| 4.11 | Percentage of visitor stated their willingness to comeback | 31 |
| 4.12 | Visitors' perception whether their presence can have an environmental impact to MCNP in relation to different variables | 32 |
| 4.13 | Visitors' environmental impact concern in relation to time spent | 33 |
| 4.14 | Visitors rating of overall environmental condition in relation to duration of stay | 33 |
| 4.15 | Variable of education level, income and age in relation to visitors' perception of environmental condition | 34 |
| 4.16 | Importance level of free entrance fee of NP to visitor in relation to visitor group of age | 34 |
| 4.17 | Importance level of free entrance fee of NP to visitor in relation to visitor education levels | 35 |
| 4.18 | Visitors opinion on cheaper entrance fee in relation to education level | 35 |
| 4.19 | Visitor perception on cheaper entrance fee in relation to resident areas | 36 |
| 4.20 | Importance level of small number of visitor in relation to variable of education level and income | 37 |
| 4.21 | Visitors perception regarding important levels of facilities provided at National Park in relation to education level | 37 |
| 4.22 | Variables and their expected influence on visitors WTP | 38 |
| 4.23 | Model results | 39 |
| 4.24 | Evaluations of WTP based on survey results | 40 |
| 4.25 | Final Model results | 40 |

List of Figures

| Figure | Title | Page |
|---------------|--|-------------|
| 2.1 | Spatial distribution of National Parks in Thailand | 7 |
| 2.2 | Relationship between amount of use and impact | 9 |
| 2.3 | Main Factors influencing perception of environmental impacts | 10 |
| 3.1 | Location of study site | 15 |
| 4.1 | Resident areas of visitor | 25 |
| 4.2 | Visitor's occupation | 25 |
| 4.3 | Various activities visitor engaged in MCNP | 26 |
| 4.4 | Visitors perception on mangrove forest condition, nature trail condition and overall environmental condition at MCNP | 29 |

List of Abbreviations

| | |
|------|---|
| CV | Contingent valuation |
| CVM | Contingent valuation method |
| DC | Dichotomous Choice |
| DNP | Department of National Parks, Wildlife and Plant Conservation |
| ICEM | International Centre for Environmental Management |
| KYNP | Khao Yai National Park |
| MCNP | Mu Ko Chumphon National Park |
| NOAA | National Oceanic and Atmospheric Administration |
| NP | National Park |
| NRCT | National Research Council of Thailand |
| ONEP | Office of Natural Resources and Environmental Policy and Planning |
| RFD | Royal Forest Department |
| TAT | Tourism Authority of Thailand |
| TCI | Thai-Journal Citation index centre |
| TCM | Travel cost method |
| THB | Thai baht |
| VP | Varying parameter |
| WAI | Weight average Index |
| WTP | Willingness to pay |

Chapter 1

Introduction

1.1 Background

National Park in many countries including MCNP in Thailand acted as environmental and conservation areas of the country where it played a vital role in both economic (ex. tourism), social & culture (ex. Livelihood) and ecosystem services (ex. disaster protection and biodiversity conservation). Nowadays there are up to 6,500 national parks throughout the world, both terrestrial and marine national park, made up approximately an area of 4.25 million square kilometers (Badman & Bomhard, 2008). Many national parks have considered tourism as a main source of income together with the hope that experienced gain from tourism will educate visitor for better appreciation and understanding of nature which will eventually improve people awareness on environmental protection and conservation. However, to manage tourism in vast area of national park while ensuring visitor satisfaction and preventing environmental degradation can be very challenging task. If the management is not well planned for rapid development of tourism this can cause many serious problems to national parks due to negative impacts of tourism related activities.

In Thailand, tourism and recreational activities in National Parks have gained so much popularity in the past ten years. Visitation rate to national parks are rising not only in Thailand, but this trend has been recognized worldwide. For instance, more than two million people visited the Great Barrier Reef Marine Park in 2007, an increase of 5.3% from 2003 according to Great Barrier Reef Marine Park Authority (2008). The demand of recreational activities in 21st century where urbanization had vastly expanding in an unprecedented rate had led to an increasingly high pressure on National Park. Many National Parks are now facing with the common issue of high levels of use by visitor. Recently there has been an ongoing debate over the decision to increasing in price of entrance fee among the popular national park destination in Thailand and now the decision has been eventually overrule by new Department of National Parks, Wildlife and Plant Conservation (DNP) chief Rerngchai Prayoonvej.

The future is unpredictable but MCNP is likely to follow the same path as other famous tourism destinations in Thailand which nowadays facing with many environmental impacts issue. For example, Khao Yai National Park (KYNP) having the highest visitation rate in Thailand with 871,268 visitors in 2007 (DNP, 2010), but also struggling with many visitor related issues like overcrowding, animal kills, waste problems, water quality etc (SANGSAN, 2010). Many research studies associated with National Park management in Thailand are considered as “reactive” that is to act only when significant negative impact have already occurred. For this reason, the fact that MCNP still considered to have minimum exposure and disturbances from high level used and from high tourism development issues but no study has ever been conducted present a great opportunity for any research study to investigate visitors’ perceptions and behaviors associated with environmental impact and willingness to pay for the conservation effort at MCNP. Since to be able to have an effective visitor management plan, manager has to understand the tradeoff between both environmental conservation and visitor characteristics aspect inside the national park. Therefore perception and behavior of visitor can help in guiding the proper direction of visitor management to support the increase in visitor number and tourism development in the future at MCNP.

1.2 Statement of the Problems

As the development and interest in outdoor tourism have been growing rapidly both in Thailand and many countries worldwide. National Park managers are left facing with the difficult challenge of providing tourism service to large numbers of visitors while at the same time have to minimize the impact to the nature and environment within the park.

Unfortunately, many national park management approaches in Thailand have been to respond with the problems that have already occurred up to an unacceptable level before taking a strong management action. A good example drawn from the study done by Saranet (2004) found that undesired visitor behavior in combination with lack of well planning and management implementation has left KYNP facing with serious bio-physical impacts including the problem of waste accumulation and impact on wildlife disturbance.

While the trend and demand of outdoor recreation in national parks has continued to rise in many countries worldwide (Eagles and McCool 2002; Maresfin and Nuva 2007). It can be expected that the growth in tourism of MCNP will likely increase in the future as well considered the uniqueness in term of natural features MCNP has to offer couple with the fact that currently MCNP still has a low number of visitors. These could present great challenges to national park manager at MCNP, especially on how to cope with visitor impact related issues. So far, no study has ever been conducted in the area of visitor impact, visitor perception and economic valuation at MCNP according to investigation on various journal databases. This may be due to that there is still not much significant change occurring to the environmental condition at MCNP or lack of recognizing of the areas from the public and even among researcher community.

As study related to perception and environmental impact normally conducted when significant change to the environment already taking place. However for that same reason, it's crucial to take proactive approach by conducting the study before any dramatic change eventually occur and alter environmental condition at MCNP, especially in the key tourism areas. By investigating the visitors' perception and characteristic these will help allow manager to understand more about visitor behavior in relation to the current and potential environmental impact issues. Not only so, the finding can be use to help corporate in improve visitor management plan to cope with possible visitor impact problems and also provided a basis as an information source for further research study to used in the future.

1.3 Objective and Research Questions

The overall objective of the study is to understand how MCNP visitors perceive the environmental impact issues induced by tourism, and how they value its conservation.

Specific sub-objectives

- a. To identify visitors' perceptions about present and potential environmental impacts in MCNP for better planning management;
- b. To evaluate the visitors' willingness to pay (WTP) for conservation projects in the MCNP;

Main question

- 1) How visitor perceive of present and potential environment status at MCNP?
- 2) What is the mean WTP of visitors for conservation of various services provided by MCNP?

Specific question

- a) What are the visitors' most important concerns regarding tourism potential impacts on MCNP?
- b) What are visitors' perceptions about the environmental status of the park?
- c) What are the most visible impacts that visitors observed at MCNP?
- d) What are the factors affecting visitor perception regarding environmental impact at MCNP?
- e) What is the mean WTP of visitor for a conservation project?
- f) What are the main factors influencing this WTP?

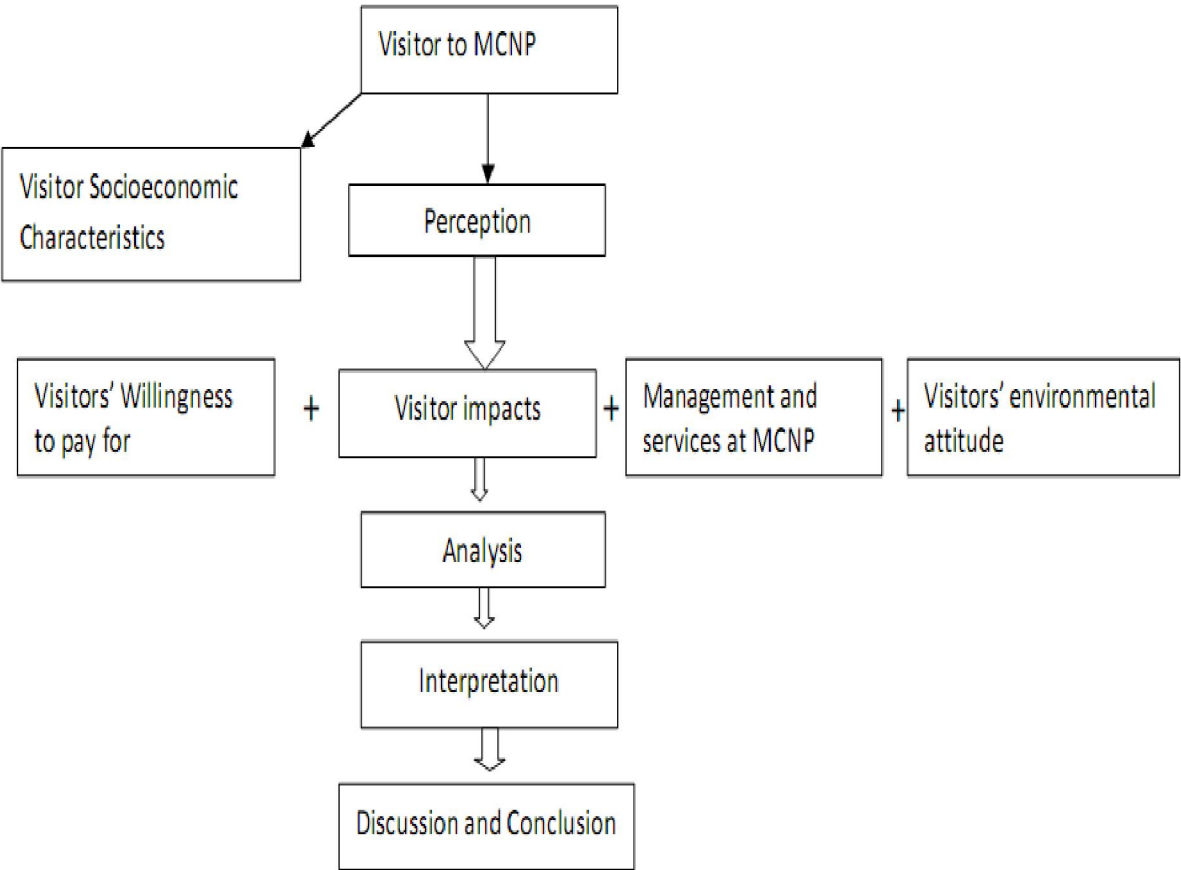
1.4 Scope of study

In this study we considered visitor as the main user of MCNP, therefore the study will centrally focus on gaining the information of presence and potential impact through visitors own experience during their visit of MCNP. Although the casual observation of bio-physical impact will be conducted and discussed together with MCNP park officer to better understand the situation and corporate with the finding. However it's important to note that due to the characteristic of MCNP with its large scale of areas cover, the study will be conduct limiting to accessible key tourism areas.

The main respondents will be visitors. Information will be collected from both quantitative data through structure questionnaire with include the use of contingent evaluation method and key informant interview. Casual survey observation and photography capture of impact will also be done to better gain understanding of the current situation. The final result of the study would be give to MCNP officer to assist in proper planning and management of visitor at MCNP with high hope that they could balance the quality of ecological state and provide quality experience for fast growing tourism in the future.

1.5 Conceptual Framework of the study

Table 1.1: Conceptual Framework of the study



Chapter2

Literature review

2.1 National Parks and Tourism

National Parks refer as certain boundary of terrestrial or marine areas declared by a national Government with its unique ecological or cultural value, which the main purpose is to protect the ecological integrity of the area while also providing developments for education, recreation and culture. Exploitation of natural resources or any activities that could damage the ecological system are normally forbidden within the National Park areas. Nowadays, there are more than 6,500 National Parks established throughout the world (including marine National Parks) accounting for approximately 4.25 million square kilometers (Badman & Bomhard, 2008).

Beside the protection and conservation purposes, National Park play a vital role in attracting visitors due to its unique natural environment which offer wide variety of recreational opportunities thus contributing significantly to tourism development of the country. Many National Parks in Thailand have shown a sign of increase in visitors in the past ten years. For example, the number of visitors at Khao Yai National Park has increased annually by 6.9% between 2003-2007 (DNP, 2010). While the trend of tourism development in National Park seems to be promising, the environmental condition which attracts tourists has many times been taken for granted. Certain level of deterioration in environmental quality can be seen as trade-off for the sake of economic value of tourism. Thus, this presents a paradox situation for park manager to face with. Not to mention tourism also given financial benefits to support for conservation (Bushell & Eagles, 2007). Tourism not only provided financial income to National Park management but also provide job opportunities and income to local people in the neighboring area (Eagles, McCool, & Haynes, 2002) justifying promotion of tourism within national parks in Thailand. This strategy was also used in Costa Rica, when the government supported tourism development in the national park as part of the plan to fight the economic crisis during the 1980s (Fennell, 2002; Honey, 1999).

Table 2.1 Annual Visitor number in selected national park, 2005-2007

| National Park | 2005 | 2006 | 2007 |
|-------------------------------|-----------|-----------|-----------|
| Yosemite, USA | 3,304,144 | 3,242,644 | 3,503,428 |
| Great Barrier Reef, Australia | 1,978,779 | 1,845,798 | 2,030,054 |
| Khao Yai, Thailand | 870,088 | 1,251,259 | 871,268 |
| Yellowstone, USA | 2,835,651 | 2,870,295 | 3,151,343 |

Source: US National Park Service, Great Barrier Reef Marine Park Authority (2008); DNP (2010)

2.2 National Parks in Thailand

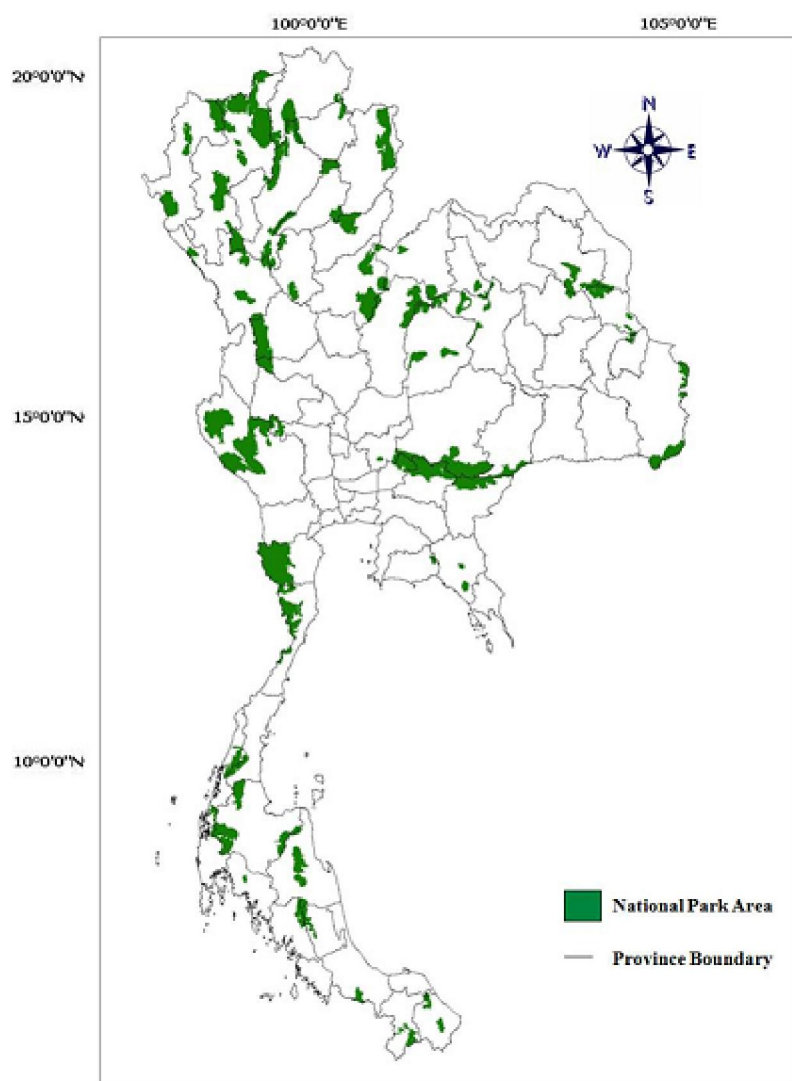
The Department of National Parks, Wildlife and Plant Conservation of Thailand (DNP) defines a national park as “a preserved area that comprises various kind of natural resources of ecological importance and unique beauty such as forest, waterfalls, caves, hills, hot springs, lagoons, and rare species of flora and fauna” (DNP, 2006b). The first National Park Act established in 1961 gave birth to Khao Yai National Park as the country’s first national park in Thailand (ONEP, 2006). Thailand’s national park act was initially founded based on the concern over exploitation of natural resources and rapid losses in forest areas. Forest area of Thailand used to be about 70 percent of the total land area, however recently it has been sharply reduced to 37 percent according to The Royal Forest Department of Thailand report in 2010. Like most national parks worldwide, the primary objectives of national park in Thailand are: 1) protecting ecological and biodiversity 2) providing recreational opportunities, and 3) supporting research and education (DNP, 2006b).

Nowadays, there are 148 national parks including both terrestrial and marine national parks established in Thailand, covering approximately 52,782 km², or 10.3 percent of the terrestrial area of the country (DNP, 2009c). All Thai national parks are under the administration of Department of National Park, Wildlife and Plant Conservation which in the past used to be under Royal Forest Department of Thailand (RFD).

2.3 National Park and Tourism related issue in Thailand

National parks in Thailand attracted more than 10 million of visitors each year both thai and foreigners (see Table 2-2). Visitor’s rate of national park in Thailand had increased from 4 to 12 million between 1985- 1995 (Fuller, 1997). With this high level of user thereby left many national parks facing and have to cope with problems of visitor impact related issues (DNP, 2004). Despite development of tourism in national park has been seen as a key to advocate people about environmental and conservation, overuses of visitor still cause ecological impact to a national park and also worsen visitors’ experience (Bushell & Eagles, 2007; Manning, 2007). While government funding for national parks in Thailand are very limited, within this reason the management of the park normally have to depend heavily on the revenues from the visitor’s related activities such as entrance fees.

Many studies had tried to understand more about tourism and visitor impact related issues. According to National Research Council of Thailand (NRCT) database there were approximately 175 studies about tourism-related issue conducted in national parks of Thailand during 1961 – 2008, many studies conducted were focusing on various aspects such as environmental impact, carrying capacity, economic valuation, local community and social economic issues.



Source: DNP (2009c)

Figures 2.1: Spatial distribution of National Parks in Thailand

Table 2.2: Visitor number in National Park of Thailand compare to total tourist number in Thailand

| Year | Thai national park visitors ¹ (million) | Total tourists visiting Thailand ² (million) | % share |
|------|---|--|---------|
| 2000 | 15.16 | 64.25 | 23.60 |
| 2001 | 12.02 | 68.68 | 17.50 |
| 2002 | 13.01 | 72.62 | 17.92 |
| 2003 | 12.56 | 79.36 | 15.82 |
| 2004 | 13.43 | 86.45 | 15.54 |
| 2005 | 13.37 | 91.05 | 14.69 |
| 2006 | 14.20 | 95.31 | 14.90 |
| 2007 | 12.23 | 97.50 | 12.54 |
| 2008 | 10.42 | 94.35 | 11.04 |
| 2009 | 11.29 | 101.37 | 11.14 |

Source: DNP (2010)

As a countermeasure to tourism related impact issues in national park, the DNP's Research team has set the objective for incorporate sustainable tourism strategy in management plan

for many national parks, the plan include all the environmental, cultural, social, and economic aspect into the management plan (DNP, 2002) .

Table 2.3: Sustainable tourism objective of Thai national park

| Sustainable aspects | Objectives |
|--------------------------|---|
| Environmental objectives | <ul style="list-style-type: none"> - Ecological conservation, including conservation of biodiversity, land conservation, watershed management, and air quality maintenance |
| Cultural objectives | <ul style="list-style-type: none"> - Better knowledge and awareness of conservation among local people and visitors - Appreciation of local natural and cultural heritage - Making sustainable tourism part of local and national culture |
| Social objectives | <ul style="list-style-type: none"> - Visitor satisfaction and enjoyment - Improvement of living standards and skills of local people - Demonstration of alternatives to mass and package tourism and promotion of sustainable tourism everywhere - Enabling all sectors of society to have the chance to enjoy national parks |
| Economic objectives | <ul style="list-style-type: none"> - Improvement of the local and national economies - Provision of local business and employment opportunities - Generation of increased revenue to maintain protected areas |

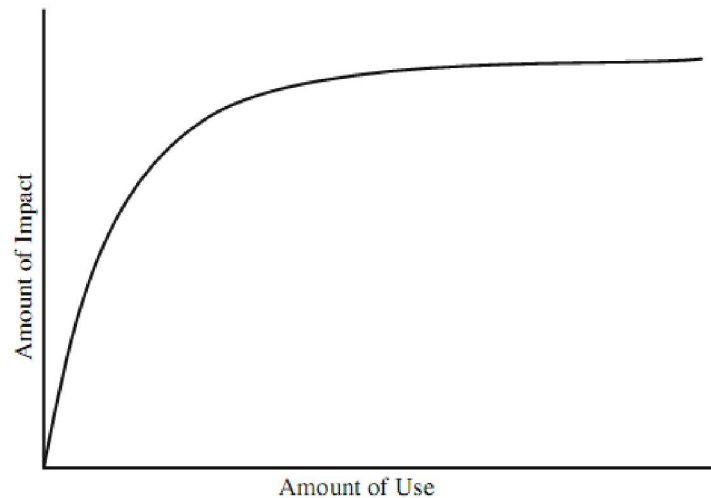
Source: DNP (2002)

One of the main reasons tourism and outdoor recreation in national park of Thailand has been booming rapidly was due to the public campaigns initiated by Tourism Authority of Thailand (TAT), for instance the campaign called “Visit Park Thailand 2000”, or “Visit Thai National Park”. This is because of TAT had realized that national park can generate large income and benefits to tourism industry (ICEM, 2003). Hence they had put more consideration in developing nature based tourism within the national park area (RFD, 1986). In the same time, many higher education institutes in Thailand nowadays offer a program of tourism management, eco-tourism as a field of study (Commission of Higher Education, 2010).

2.4 Visitor impact related issues in national park

Visitor impacts, in the context of visitor management, normally refer to bio-physical impacts which display a negative change in the environment as a result of visitor related activities (Hammit & Cole, 1998; Liddle, 1997). Important question in which many visitor impact study try to address include 1) what types of visitor impacts exist in a particular area; 2) what level of impacts exist in the area; 3) what causes the impacts; 4) what are factors contribute to the impacts 5) what level of visitor impact is acceptable and unacceptable within national park 6) how can managers manage both visitor use and environmental protection 7) how can we improve visitor impact study in national park (Buckley, 2004b; Farrell & Marion, 2001; Leung & Marion, 2000). Study of visitor impact on environment in national park may require a long-term monitoring but not many studies were able to fulfill that due to factors like funding, education timescale, etc.

Study of visitor impacts whether perceptual or bio-physical, are aim to support the development of national park visitor management plan through the finding of the study (Cole, 2004; Daniels & Marion, 2006; Deng et al., 2003). The understanding in visitors' perception of environmental impacts is an essential part constituent to the management and quality of recreation services provided in a national park (Cressford, 2000).



Source: Cole (2004)

Figure 2.2: Relationship between amount of use and impact

Visitor impact normally occurred mainly on specific site within national park areas with high accessibility and popularity. Environmental impact reported in Thai national park can generally be categorize in five main types 1) Wildlife impacts 2) Soil impacts 3) Vegetation impacts 4) Water impacts 5) air impacts (Leung & Marion, 2000). Some of these impact includes loss of plant and wildlife habitats (Wangkulangkul, 2009); soil erosion and compaction (Chatsiriworrakul, 2003); water quality (DNP, 2004), wildlife disturbance e.g. change in behavior (Sangjun, Tanakanjana, Pattanavobool, & Bhumpakphan, 2006), habitat fragmentation (DNP, 2004) and oil film on water surface (DNP, 2004) among other studied. Based on the finding of many studies and reported from DNP, it can be concluded that tourism have caused environmental impacted in Thai national parks. Moreover, finding of visitor impact studies in Thailand are similar to finding of study in other countries. For example, study of common visitor impacts found in Thai national parks is similar to the impacts reported in the United States (Cole, 2004; Englebert et al., 2008) or in Australia (Smith & Newsome, 2002; Sun & Walsh, 1998).

Factors affecting level of visitor impacts include visitor number, duration of stay, means of travel, use patterns and trends, visitors attitudes and beliefs, management and regulation, and perception (Bonnes, Lee, & Bonaiuto, 2003; Cressford, 2000). Visitor impact occurred not only influence by the number of visitor (considered both numbers and length of visit), but also as a result of the damage done per visitor.

2.5 Perception of Environmental Impacts

The term perception in social psychology can be defined as “the processes by which people perceive one another, and is an impression, a sense, or both, of personalities and social traits of others based on their behavior” (Roeckelin, 2006). Perception is part of human

psychological thinking process (Bonnes et al., 2003). Perception is subjective to each individual and leads to decision making or judgment of each person. Albeit perception may imply certain level of awareness it's not necessary have to be true and various factors may influence with individual perception at that moment. Hence, from a visitor perspective, preference of individual experience or the environment that they prefer to be in and the impacts they have been encounter with, are all influence on their perceptions (Kaplan & Kaplan, 1989). Study about visitor perception is quite common in many tourism or recreation related studies, (Chin, Moore, Wallington, & Dowling, 2000). Example of most perception study includes perception of environmental impact and perception of park management and services among others.

According to Symmonds, Hammitt, & Quisenberry, (2000) “perception of environmental impacts refers to how visitors perceive about changes in environmental conditions”.

Many environmental impact studies regarding perception have been conducted in relation with issue like acceptability level of impacts and negative changes in environmental conditions (Deng et al., 2003; Floyd, Jang, & Noe, 1997). Some studied on visitor's perception of environmental impact has focused on the aspects like: 1) the ability of visitor to realized the impact, 2) the perceived significance of impact to the natural environment 3) the perceived of an impact condition as desirable or undesirable (Graefe et al., 1984) Visitor perceptions as aforementioned are dependent on a various kind of factors, such as, visitors' background, types of activity visitors engage with, recreational goals of different visitor group, environmental knowledge, and awareness (Hammitt & Cole, 1998). Main factors which various studies have been indentified to affecting perceptions include education, economic status, social class and gender (Zebroski, 2007). Moreover, some past studies have found that perception of impacts on environment differ between managers and visitors group in different activities (Farrell,Hall,&White,2001) Based on finding from studies in the past, factors which affecting visitor's perception on environmental impact can be categorized into five main groups as in figure 2-4

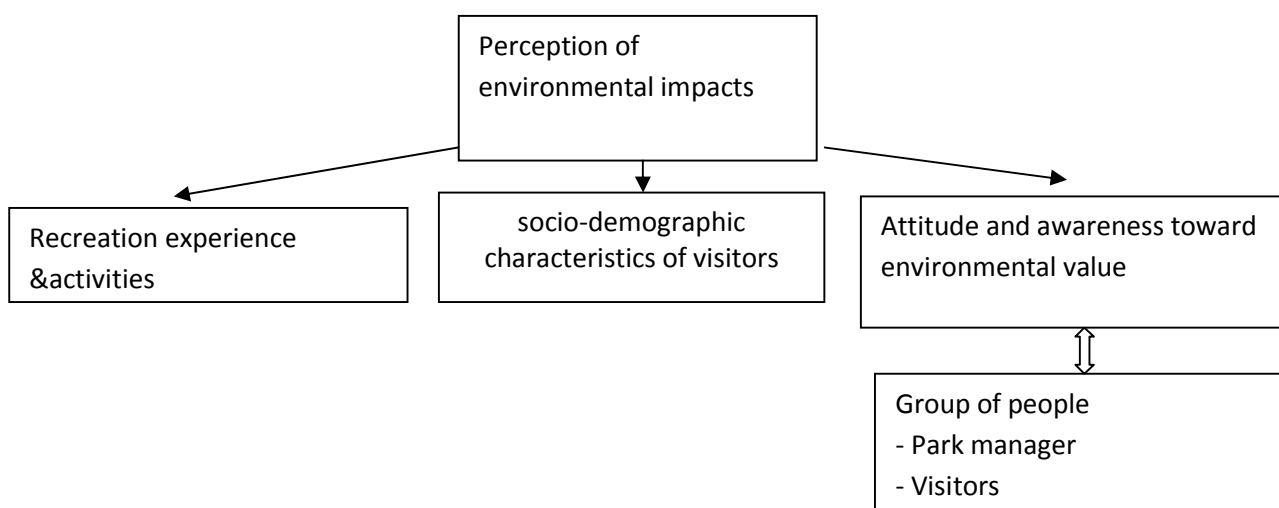


Figure 2.3: Main Factors influencing perception of environmental impacts

Past studies of visitor perception on environmental impact have indicated that visitors are often not very aware of their own impacts which they had induced but visitor rather recognized direct impact which induced by other visitors, such as litter, air pollution, noise and vandalism (Hillery et al., 2001; Manning, 1999)

Value

Values can be defined as to “what we hold dear, such as personal values, religious values, economic values, and even value of ecological services” (Rokeach, 1973).

Attitudes and Norms

An attitude is defined as “the evaluation, either favorable or unfavorable of an entity, object or situation. While values and value orientations are believed to direct attitudes, attitudes are believed to directly influence behavior. Attitudes are used to measure respondents’ preferences, opinions, and perceptions. Human-dimensions research measures attitudes on surveys by framing opinion questions in terms of like-dislike, good-bad, and positive-negative.” (Cline, Sexton and Steward, 2007)

Visitor Impact Acceptability

Visitor impact acceptability refers to which extent an environmental condition in the given area is judged to be tolerable based on visitor point of view (Floyd et al., 1997). In the context of visitor impacts, the study of level in visitor acceptability there are often related to natural environment quality and visitor experience (Goodnan & Manning, 2008). Knowledge about visitors’ acceptability of environmental impacts in relation with current management practices in a national park can help improve decision making process of park manager (Miller & Twining-Ward, 2005).

Social norm can be applied to explore acceptability levels of visitor over observed impacts at a particular site (Shelby & Heberlein, 1986). Social norms can be defined as rules or standards that are customary accepted within a given society or group (Ajzen, 2005). Another way to understand impact acceptability from visitor is by investigating the level of environmental concerns visitors have on that site. Environmental concern can be put as “attitudes towards the current and future environmental condition” (Dunlap et al., 2000). Studied done by Floyd have revealed that person with higher environmental concern are less tolerant to environmental impacts (Floyd et al., 1997).

2.6 Economic valuation

Economic valuation can be defined as an effort to identify economic values of the goods and services provided by environmental resources which are normally not being traded (Hanemann, 1994, Barbier et al., 1997). In absence of prices resulting from a market, the costs and benefits of these non-market resources are difficult to measure. However, some economic valuation methods have been developed to tackle this problem. Many techniques rely on the willingness to pay (WTP) concept that can be defined as the “the maximum amount an individual is willing to pay in other goods and services in order to obtain some good, service, or state of the world” (Lipton, 1998). National Oceanic and Atmospheric Administration (NOAA) (2006) stated that “environmental valuation is mainly based on the principle that individuals are willing to pay for environmental gains or willing to accept compensation for some environmental losses”.

The Contingent valuation method(CVM) referred as stated preference methods due to the fact that individuals' stated the value in responses to hypothetical situations while reveal preference methods the person reveal their values in response to their actual behavior.

CVM is a stated-preference technique for exploring the economic value of non-market resources or existence value such as recreation value, wildlife, ecosystem and environmental services (Mitchell and Carson, 1989). The key concept of CVM works by used of sample surveys and asking respondents (visitors) their willingness to pay with specific hypothetical questions regarding non-market resources; for example, interviewed persons are asked the amount of money they would be willing to pay to maintain the quality level of or to compensate for the loss of an environmental service. The CV method is commonly used as nonmarket valuation technique in the areas of environmental impact assessment, valuation of public goods and cost-benefit analysis (Mitchell and Carson, 1989). The word contingent refers to the fact that the values given by visitors are contingent on the hypothetical scenario in the survey. CV method for assessing willingness to pay has been used worldwide in both developed and developing countries in the context of economic valuation of use and non-use value of resources.

Travel cost method (TCM) is a revealed preference method which has been widely used as a tool in economic valuation of recreation resources. TCM captures the travel cost of visitors to the site as an indicator of the value attributed to the recreation resources (Arin & Kramer, 2002).

However there are major advantages of CVM over TCM worth to be considered. CVM can assess visitor WTP base on the hypothetical change of recreation quality or given condition, plus CVM also allow the valuation to be done even with multi-purpose and multi-destination both of which TCM would not be able to capture (Sorg and Nelson, 1987). Moreover CVM is the only approach able to capture both used and non-use value of environment services from both users and non-users (Richard and Mitchell, 2003).

In the context of CV survey methodology, there is no one-for-all single standard approach. However, there are some key factors consists in the design of CV survey. First, a CV survey should contain a description of hypothetical or real scenario in which the respondent will have to understand first before asked to give valued for. For instance, the scenario may describe the situation about the importance of endangered species that needed special protection program inside national park area. To put it another way, the information provide regarding scenario intended to give a good understanding of what respondent will be asked to put value for. Next, the survey must develop a method for respondent to express their value which can be done in many ways, including typical method such as open-ended question, dichotomous choice, bidding games and referendum formats. Finally like most survey method, CV survey will also ask to obtain socioeconomic characteristics of the respondents (eg. age, sex, income, education level) along with information about their recreational characteristics and behavior (Portney, 1994).

Example different types of CV questions

- Open-ended question- “What is your maximum you would pay to sustaining the forest by supporting plantation project” This type of question format would allow respondent to put any amount they want.
- Dichotomous Choice (DC) or Referendum type- “Creating protection unit for endanger species in the areas of National Park will increase entrance fees by \$10, Would you willing to pay for such project? This type of question would limited the answer from respondent to only yes or no but the amount of money can be vary across respondent. This method allow respondents to give answer regarding their

decision in DC question easier since people are usually familiar with discrete choice in market transaction in real life (Hanemann, 1994).

- Bidding type- “Would you pay \$5 to support plantation project in ..National Park? If respondent say “YES” then increase the amount in the next question. The question stop when the respondent say “NO”

CVM was employed to estimate the economic value of the recreation experience at the Prince Albert National Park (PANP) in Canada (Loewen and Kulshreshtha 1995). The main objective of their study was to estimate the economic benefit which derives from recreation value in the PANP and to analyze visitor characteristics. A sum of 79 PNAP visitors have been collected and used in the analysis of the survey, where the sample consisted of day visitors, accommodation guests, and campers. CVM was used with foreign and local divers visiting a marine sanctuary in the Philippines (Arin and Kramer, 2002). Their study result suggests that the higher education level have a correlation with a higher level of WTP for entrance fee of marine sanctuary. While the lower WTP can be associated with lower income level of visitors.

CVM was also used in Thailand for estimating visitors WTP for an improvement program of coral reef in Phi Phi Marine National Park (Seenprachawong, 2003). In this study CVM was used to capture values associated with coral reef at Phi Phi Marine National Park by asking “whether he/she would be willing to pay a pre-determined amount to a trust fund to totally restore the coral reefs at Phi Phi. The price ranged from 50 to 2,000 baht per year for thai visitors and from USD1 to USD50 a year for foreigner visitors” (Seenprachawong, 2003). A total of 400 thai visitors and 128 foreigner visitors were interviewed. The respondents were provided with information about the current coral reef situation in Phi Phi, which stated that “the reef at Phi Phi is about one quarter degraded and that if nothing is done, scientists estimate that it will become 40% degraded in about 20 years” The study was employed the dichotomous choice format, which allow the respondents to answer only “yes” or “no” to a given amount of price. In this study it’s assumed that the awareness level of environmental problems and socioeconomic characteristic variable can have a correlation with the perception of coral reefs recreational value, although the result of the study didn’t discuss about it .These variable normally have been included in the CV questionnaire survey since socio-demographic characteristics of respondents such as age, income and education are correlated with opinions regarding pricing in WTP (More and Stevens 2000). The study found a significant difference of mean WTP between foreign tourists (US\$17.15) and Thai tourists (US\$7.17)..

Another study in Thailand conducted by Chutarat (2008) used CVM to evaluate the economic value of Phu Kradueng National Park by asking willingness to pay of visitor to finance conservation of Phu Kradueng National Park with an hypothetical situation that quality would decline if nothing has been done. CVM was also used to evaluate the economic benefits of scuba diving in Mu Ko Similan Marine National Park in Thailand (Asafu and Sorada, 2008).

Table 2.4: Comparison between Travel cost and CV method

| Method | Applicable to | Description and Importance | Constraints and Limitations |
|----------------------------------|--|---|---|
| Travel cost method(TCM) | Recreation and Tourism site | The recreational value is estimated from the spending money of people for reaching the site. It's referred as "revealed preference method" | Over estimated can occurred as the site may not be the only reason for travelling to that area. |
| Contingent Valuation method(CVM) | Recreation, Tourism and Non use values | This method directly ask people how much they willing to pay for specific environmental services. It's referred as "stated preference method" | Possible bias during the interview such as under pricing bias. |

Note that according to Wells (1997) studied about "Economic Perspectives on Nature Tourism, Conservation and Development" paper for the Wolrd Bank. In this paper he stated that "Despite the recent popularity of willingness-to-pay surveys of park tourism, their practical value remains questionable. In theory, such studies enable a tourism demand function to be estimated. But the variety and complexity of the methods used, combined with the volatility of tourist preferences, do not make single willingness-to-pay surveys a reliable basis for setting park entry fees."

Chapter 3

Research design and Methodology

3.1 Profile of study site: Mu Ko Chumpon National Park

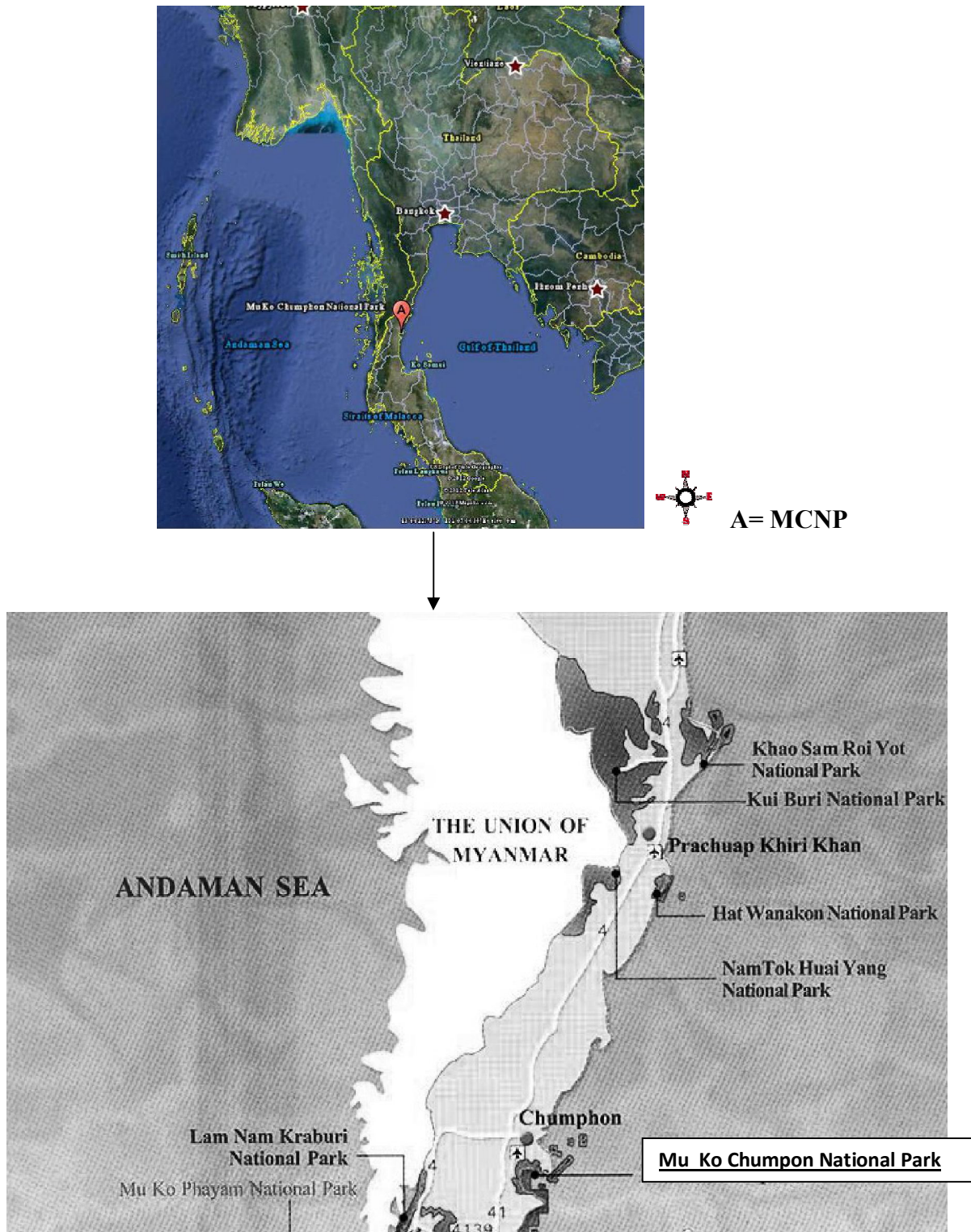


Figure 3.1: Location of study site

Mu Ko Chumpon National Park is located between 10°02'18 to 10° 30'05" north latitude and 99° 07'42"E to 99° 25'45"E East longitude at the upper southern part of Thailand. MCNP approximately covers an area of 317 square kilometers of both terrestrial and sea area. The MCNP covers Lang Suan, Thung Tako, Mueang, Sawi and Pathio Districts of Chumphon. MCNP main entrance is situated at 30 kilometers from Chumphon city and at about 500 kilometers from capital city of Bangkok.

In the past it used to be named Hat Sai Ri National Park before change to Mu Ko Chumpon National Park in 1999. The geography of MCNP consists of terrestrial, marine areas, beaches, bays and an archipelago of 40 limestone islands. Most of the islands are very small and none-habitable. The flora ecosystems also consist of mangrove forest, beach forest, moist evergreen forest, tropical rain forest. The coral ecosystems found in MCNP are at Koh Chorakhe, Koh Mattra, Ko Kula, Koh Langka Chio, Ko Thong Lang, Ko Lawa, Ko Lak Rad. Climate of MCNP is greatly influenced by the northeastern monsoon wind blow from October to January and the Southwest monsoon from mid-May to the end of September each year.

Table 3.1: Types of visitor and Visitor activities in MCNP

| Types of visitor | Visitor Activities |
|---|---|
| Family/ Social groups (friends etc.) Individual Commercial groups/ Tour Educational groups | Bird-Watching Camping, Picnic Trekking, nature trail Water related activities ex. Diving, snorkeling, Kayaking etc. Wildlife watching& Photography Learning, Educating class |

Table 3.2: Annual visitor number during fiscal year from 2006-2010

| Fiscal year | Visitor no. |
|--------------------|--------------------|
| 2006 | 19,537 |
| 2007 | 24,453 |
| 2008 | 34,178 |
| 2009 | 26,829 |
| 2010 | 16,674 |

Primary source: MCNP head office (2012)

Table 3.3: Compare annual number of visitor between some major National park destination in Thailand with MCNP

| National Park in Thailand | Year 2010 |
|---------------------------------------|------------------|
| Mu ko Chumphon NP | 16,674 |
| Khao Leam Ya - Mu Ko Samet NP | 280,945 |
| Khao yai NP | 823,552 |
| Tarutao NP(SaTun province) | 42,778 |
| Mo Koh similan NP (Phangnga Province) | 24,962 |

Source: DNP (2010)

Visitors: For the purpose of this study, “visitor” can be defined as a person apart from National Park officer who visits MCNP for any purposes.

3.2 Research design and data collection method

Developing and executing survey method is very important in order to gain an accurate data for the study. The study will investigate the perception of visitor as main users of MCNP. The literature review regarding tourism in national park will be use to develop the structure questionnaire. The questionnaire was categorized specifically to capture visitor perception in four parts. The first part of questionnaire will obtained visitors characteristic, perception of environmental impact condition and management services at MCNP. This part is an introduction to the survey. The second part contained CVM question. The third part try to obtained environmental attitude and the final part contained question regarding socio-economic of respondents such as education, employment, salary etc.

A pre-test questionnaire survey of 30 questionnaires and field observation with MCNP officers was carried out during 29 June - 2 July, 2012. The pre-survey allow the study to corrected, adjust the questionnaire and also help set a possible range of price in WTP question to be used in final dichotomous choice elicitation format.

Face-to-face interview will be conduct as suggested by National Oceanic and Atmospheric Administration, (NOAA) and visitors will be asked if they are willing to participate in the study and if agreed visitors will be given a brief description of the study purpose and its objective. The questionnaires will be conducted at the key tourism spots in MCNP such as accommodation areas, food areas, and activities area like nature trail, and Park offices etc., places which most visitors frequently occupying during their stayed at MNCP. The data collection locations were selected base on pre-survey of visitor availability, accessibility and time constraints factors.

3.3 Sample area and size

During September 2012, visitors at MCNP will be interviewed face-to-face randomly at key recreational spots in MCNP by researcher and trained assistants (2-3 persons) using a structured questionnaire. The interviews will be conducted during both weekdays and weekends. The targeted visitors are only domestic (Thai visitor) due to a very low number of foreigner visitor. The encountered visitor will be asked to participate with be given information regarding the nature of the study. The refusal numbers (rate) will also be recorded together with the reason of refusal.

The number of sample size derived by using of the average annual visitor number of MCNP during 2006-2010b (N= 24,334) calculate with Yamne Taro formula for $\pm 7\%$ Precision Levels where Confidence Level Is 95%. Thus in this study the sample size will be 200 interviews.

$$n = \frac{N}{1 + N(e)^2} \quad (\text{Yamane, 1967})$$

Where, n = sample size , N= population size and e = error limit

For the CVM, a single bound method will be employed, they will have to answer a single question about their willingness to pay for preserving the present environmental conditions. Interviewees will be divided into 4 homogenous sub-groups. Each sub-group will be proposed a separate price (5, 10, 15, and 20 baht). Proportions of male/female and different age groups will be the same within each sub-groups (table 3-4)

Table 3.4: Proportion of age and gender in sample size

| | Male | Female |
|-----------|------|--------|
| Age < 25 | 25% | 25% |
| Age >= 25 | 25% | 25% |

3.4 The contingent valuation method design

The closed-ended single-bounded referendum CVM method will be used in this study to measure visitor WTP. It's vital for the study to employ realistic payment choices in a CV method (Whittington, 1998). In this case, a pre-survey with 30 respondents has been conducted first to gain the appropriate price to be use in final survey. The prices will be set according to the increase from standard admission fee of MCNP of 40 baht for adult and 20 baht for children.

After testing questionnaire the price ranges with 30 visitors at MCNP. The result suggested that targeted respondents would be 200 persons due to the low number of visitor inside the NP. The price range would be used in 4 set included 5, 10, 15, and 20 baht where each respondent will be ask with a different price.

The description of CV related question was respectively designed to give visitor with proper and adequate information, in order to making sure that visitor knew the data from this survey study would not be involved or used in any pricing related policies of entrance

fees at MCNP, but instead the study aim to measure the economic value of non-market value resources of MCNP. The information given regarding CV question will help reduce the bias in elicits true value and will also help reduce the rate of refusal from respondents.

In CV method rather than asking the respondent to state the WTP for the outcome, the method asking respondents to state their WTP for a specific program to contribute to the outcome of the event as a preferred matter of gaining a realistic valuation (Provencher, et al. 2012). Thus, the CV hypothetical question is carefully design to draw out valid answers from visitor by using single-bounded referendum format question to gain respondents WTP for improvement of service at MCNP by asking “Would you be willing to pay an additional\$ to the current entrance fee of MCNP in order to prevent the degraded condition of mangrove forest by supporting the mangrove plantation project and maintenance of nature trail in mangrove area of MNCP? The respondent then can simply reveal their preference by saying “yes” or “no” to the question.

3.5 Data analysis

Cross tabulation

A cross-tabulation and chi-square test can help identify data if two variables are inter-related or not. This statistic method will be used to analyze overall perception of visitors toward environmental attitude, services and management of MCNP. Also will able to identify different factors affecting the perception such as education, age, income, career or attitude toward environment and so on.

Chi-square test

The test will use to analyze whether the proportion of data from different group of member with the same characteristic different or not.

Logistic regression model

This technique can analyze the data that includes dichotomous or binary response variable, hence the CVM part of study will be analyze through logit regression model. This will allow the study to identify different factors influencing the WTP of visitor through multivariate analysis. Visitors’ response yes or no in wiliness to pay question (coded 1 or 0 respectively), provided a binary dependent variable to be modeled in respect to the price range plus other explanatory variables.

Weight average index(WAI)

Weight average index is used for understanding the perception of visitors regarding the importance level of various issue such as small number of visitor, free entrance fee etc. The technique will assigned the score weight to each rank of category base on priority level (1 for first rank, 0.5 for second rank and 0.33 for third rank)

$$\text{WAI} = \frac{x(1.0) + y(0.50) + z(0.33)}{(x+y+z)}$$

where x = number of respondents (frequency) in 1st rank
 y = number of respondents (frequency) in 2nd rank
 z = number of respondents (frequency) in 3rd rank

Random utility models

The basic model for analyzing dichotomous CV responses is the random utility model (RUM). The rationale of RUM is that respondents answer according to the expected impact of the proposal on their utility/welfare. The respondent's utility is assumed to be function of (a) the respondent's income y_j , (b) a vector z_j of individual characteristics such as age, education level, etc., (c) an environmental quality indicator q_i that is expected to take a different value when the program is implemented, and (d) some preferences known to the respondent but not observed $e_{i,j}$ (so they look random to the observer). A very general version of the indirect utility function a respondent j can be written $u_{i,j}(y_j, z_j, q_i, e_{i,j})$ where i is an indicator variable taking the value 1 when the program under evaluation would be implemented and 0 when the program is not implemented (baseline).

Uncertainties associated with the unobservable variables impose to analyze results in terms of probability of agreeing with a proposed program. The probability that respondent j responds yes to a program that would impose a payment t will be equal to the probability that he is better off, i.e. his utility is higher under the proposed scenario, even if he is required to pay. This translates as:

$$\text{Prob (Yes)} = \text{Prob} (u(y_j - t, z_j, q_1, e_{1,j}) > u(y_j, z_j, q_0, e_{0,j})) \quad (1)$$

For a parametric approach, we need to make some additional assumptions about the function u . Most CV approaches are specifying the utility function u as “additively separable in deterministic and stochastic preferences”, that is $u_{i,j}$ is described as the sum of a deterministic component $v(y_j, z_j, q_i)$ and of a stochastic component $e_{i,j}$.

$$u_{i,j} = v(y_j, z_j, q_i) + e_{i,j}$$

With this additional assumption, the equation (1) can be rewritten as:

$$\text{Prob (Yes)} = \text{Prob} (v(y_j - t, z_j, q_1) - v(y_j, z_j, q_0) > e_j) \quad (2)$$

where $e_j = e_{0,j}$. If we define $F_e(a)$ as the probability that the random variable e is less than a , the probability of a yes is becoming:

$$\text{Prob (Yes)} = 1 - F_e(- (v_{1,j}(y_j - t, z_j, q_1) - v_{0,j}(y_j - t, z_j, q_0))) \quad (3)$$

We are considering two alternative formulations differing by the hypotheses made about the impact of revenues on the WTP. First, we will assume a linear utility function in income and co-variants for the deterministic part of the utility function; later we will investigate a formulation of income variable.

Linear utility function

If we assume that the deterministic part of the utility function is linear utility function in income and co-variants, we can write $v_{i,j}(y_j, z_j, q_i) = \alpha_i \cdot z_j + \beta_i \cdot y_j$.

$$\text{Hence : } \Delta v = v_{1,j}(y_j - t, z_j, q_1) - v_{0,j}(y_j, z_j, q_0) = (\alpha_1 - \alpha_0) \cdot z_j + (\beta_1 - \beta_0) \cdot y_j - \beta_1 \cdot t_j$$

A reasonable assumption is that the marginal utility of income b_i remain the same between the two CV states unless the proposed CV scenario provides a substantial change. Hence $\beta_1 = \beta_0$ and the utilities difference becomes

$$\text{Linear : } \Delta v = v_{1j} - v_{0j} = \alpha. z_j - \beta. t_j \quad (4)$$

If we suppose that $e \sim N(0, \sigma^2)$ equation 3 becomes:

$$\text{Prob(Yes)} = \text{Prob}(e_j < \alpha. z_j - \beta. t_j) = \Phi\left(\frac{\alpha. z_j - \beta. t_j}{\sigma}\right) \quad (5)$$

where $\Phi(x)$ is the cumulative standard normal, i.e. the probability that a unit normal variate is less than or equal to x . This is the probit model.

Varying parameters formulation

For CV studies with a very low cost, as assumed in the previous section, it is really plausible that the marginal utility of income does not vary with the income of a given respondent. However, it is also plausible that the marginal utility of income varies across individuals with different incomes. One means to allow the marginal utility of income to vary across individuals is to use a vector of dummy variable indicating the income category of the respondent and allow the coefficients to vary by income categories. We separated respondent's income into two categories by creating a dummy variable D equal to 1 when income is above 15,000 THB/month and zero otherwise. The two utility functions become:

$$v_{1j} = \alpha_1 z_j + \beta_1 (y_j - t_j) + \delta. D. (y_j - t_j)$$

$$v_{0j} = \alpha_0 z_j + \beta_0 (y_j) + \delta. D. y_j$$

$$\Delta v = (\alpha_1 - \alpha_0) z_j + (\beta_1 - \beta_0). y_j + (\delta_1 - \delta_0). D. y_j - \delta_1. D. t_j \quad (6)$$

For a given respondent, it is plausible to assume that $\beta_1 = \beta_0$ and that $\delta_1 = \delta_0$ then equation 6 becomes

$$\Delta v = \alpha_1 z_j - \beta. t_j - \delta. D. t_j$$

Adding uncertainties, we obtain:

$$\Delta u = \alpha. z_j - \beta. t_j - \delta. D. t_j + e \quad (7)$$

This new formulation can be integrated in equation 5 and leads to the same estimation procedure using a probit formulation.

$$\text{Prob(Yes)} = \text{Prob}(e_j < \alpha. z_j - \beta. t_j - \delta. D. t_j) = \Phi\left(\frac{\alpha. z_j - \beta. t_j - \delta. D. t_j}{\sigma}\right)$$

Estimation of the median “maximum WTP”

Equating utility in the improved state to utility in the status quo state gives an implicit expression of the maximum willingness to pay. In other words, we can identify the maximum WTP of a respondent by finding the value of t_j that solve $\Delta u = 0$ where Δu is defined in equation 7.

$$\text{Max WTP}_j = \frac{\alpha \cdot z_j + e_j}{\beta + \delta \cdot D}$$

Median value for the max WTP can be found by substituting $e_j = 0$.

$$\text{Median (Max WTP}_j) = \frac{\alpha \cdot z_j}{\beta + \delta \cdot D} \quad (8)$$

The parameters α , β and δ are unknowns that can be estimated from the probit model. A consistent estimate for expected or median willingness to pay can be found by substituting consistent estimates of the parameters α and δ into the expressions for the median willingness to pay.

Table 3.5: Definition of variable in statistic analysis

| Variable name | Type of variable | Type of Data | Definition |
|--------------------------------|------------------|--------------|-------------------------------------|
| Income | Independent | Ratio | Monthly gross income in Baht |
| Age | Independent | Ratio | Age in years |
| Gender | Independent | Categorical | Dummy variable 1= male 0= female |
| Education | Independent | Ordinal | Education level |
| Environmental awareness | Independent | Ordinal | Environmental awareness level |

3.6 Rationale for methods selection

Structure Questionnaire survey: This method allow researcher to gain the information from target respondents (visitor) efficiently and effectively at the individual level which will allow researcher to gain enough data with high number of expected respondent in a short limited of time therefore suite for the study overall objective. The close ended and open ended questions were both used in the questionnaire.

Personal Interview: This method employs to gain the perception from the park officer side in order to compare the result with perception of visitor and to better understand the situation of visitor management and impact related issues at MCNP both in present and future.

Casual field observation: The field observation was done at different key tourism areas to gain the insight of the current situation and condition of both tourism and environment of MCNP. The site of field observation included the nature trail in mangrove forest areas, accommodation areas, key tourism islands destination at Koh Lak Rad, Koh Lawa, Koh Mattra.

Chapter 4

Result and Discussion

4.1 Visitor characteristics

Table 4.1: Visitor's number of visit to MCNP

| No. of Visit | Visitor no | Percentage |
|--------------------------|------------|------------|
| Once(first time visitor) | 101 | 50.50% |
| Visit more than once | 99 | 49.50% |
| Total | 200 | 100 |

The result in Table 4.1 shows that from the total 200 visitors interview conducted at MCNP, the number of visiting percentage suggests that visitors at MCNP came to MCNP just for their first time with 101 visitors (50.50 percent) while 99 visitors have been visiting MCNP more than once (49.50percent). The amount of first time users implies that MCNP is still not really well known among domestic visitor. Also it should be noted that during the time of conducting the survey at MCNP the researcher didn't encountered any international visitor in the park.

Table 4.2: Duration of stay

| Duration of stay | Visitor no | Percentage |
|------------------|------------|------------|
| One day trip | 142 | 71% |
| Overnight stay | 58 | 29% |
| Total | 200 | 100 |

Table 4.3: Visitors' accompany

| Visitor accompany | Visitor no | Percentage |
|-------------------|------------|------------|
| Friends | 132 | 66% |
| Family | 50 | 25% |
| others | 18 | 9% |
| Total | 200 | 100 |

As for duration of stay majority of visitor spend time at MCNP only as a one day trip with 71percent, while 29 percent has stayed overnight. The travel companies of visitor were mostly accompanying by friends with 132 visitors (61percent) or family members with 50 visitors (25percent) and only 18 visitors (9 percent) came alone or with co-workers. The result indicated that visitors at MCNP mostly came just for one day trip and not many visitors came for staying overnight at the park. From the casual observation survey, we found that the location of the accommodation areas of MCNP is somewhat very difficult to access as it's situated on top of the hill plus the access road is very steep which limited the accessibility. Moreover the accommodation areas of MCNP were considered quite a remote area as it's quite far from the nearby dwelling community, plus no food facility provided within the park as there is no restaurant nearby (the closest restaurant is about 9 kilometers away) with only two bottle of water per room are provided. All these factors may contribute to the reason of low level of overnight stay at MCNP despite the park have accommodation room provided with facilities in term of air-condition, shower room and television.

Table 4.4: Area visited by visitor at MCN

| Area visited | Visitor no(out of 200) | Percentage |
|--------------------------|------------------------|------------|
| Mangrove forest | 193 | 96.50% |
| Beaches | 91 | 45.50% |
| Islands around NP | 45 | 22.60% |

As shown in Table 4.3 mangrove forest areas have the highest visitor rate with 193 out of 200 visitors (96.50 percent) had visited mangrove forest areas at MCNP. This indicated that mangrove forest areas has a very high exposure level to the visitor related impacts comparing to the other areas such as beach areas and islands around MCNP which have much lower visitor rate with 45.50 percent and 22.60 percent respectively. However it should be noted that the low percentage of visitor rate at beaches and islands around MCNP were likely be influenced by the monsoon season during the time of conducting the survey (the survey was conducted in September 2012).

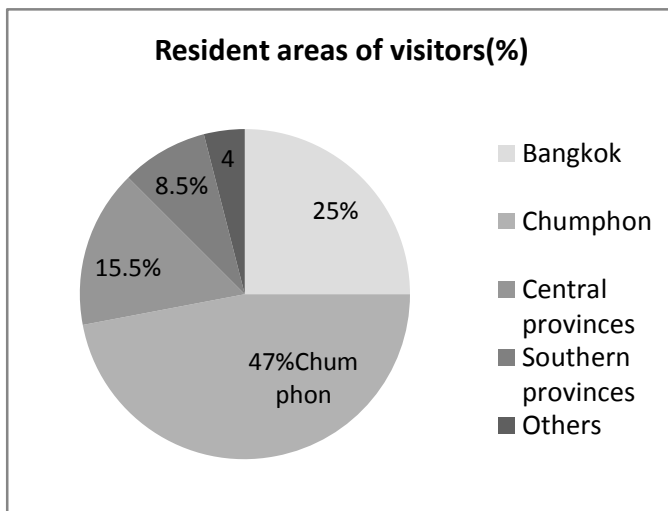
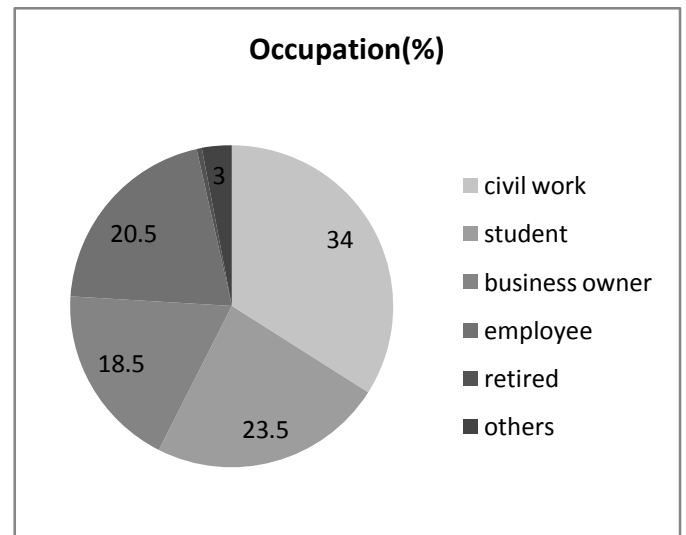


Figure 4.1: Resident areas of visitor



Figures 4.2: Visitor's occupation

As shown in figures 4.2, visitor occupation at MCNP, majority of them were civil servant (34 percent) followed by visitor group of students (23.5 percent), private employee (20.5 percent), business owner (18.5 percent), retired group (0.5 percent) and others (3 percent). The study also found that many of the students who reside in Chumphon province came to visit MCNP for educational purposes such as writing a report study or as an educational trip with university or school. While majority of visitor came to MCNP just a one day trip. Note that the result could be influenced by seasonal factor.

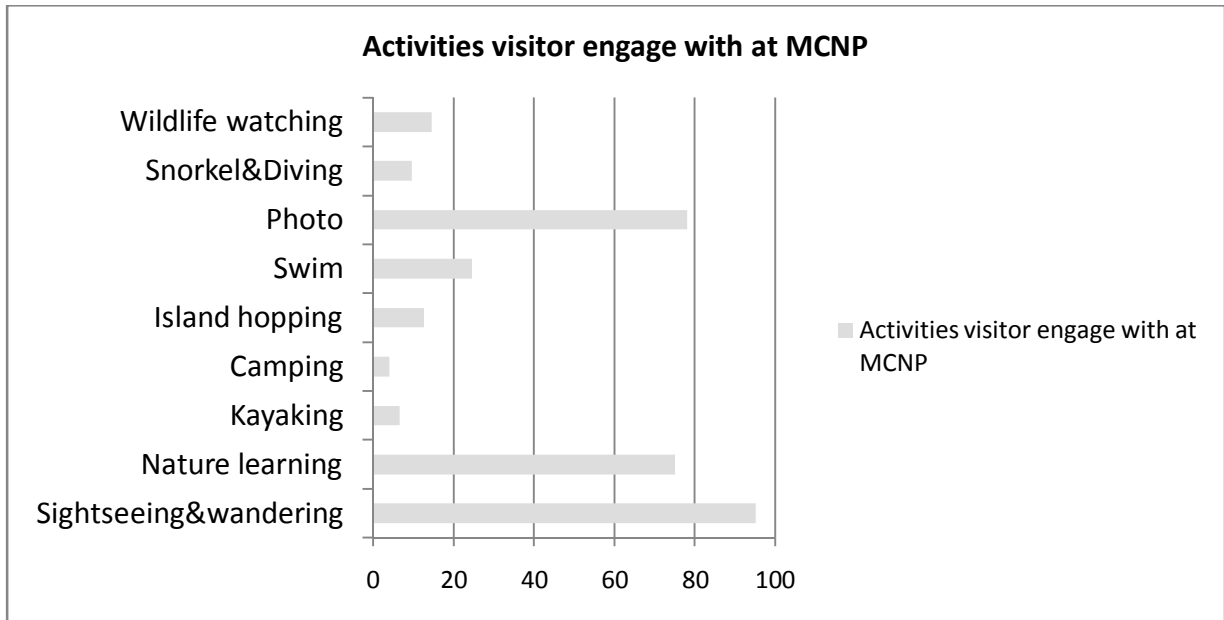


Figure 4.3: Various activities visitor engaged in MCNP

As shown in figure 4.1, the result shows that majority of visitor who visit MCNP were people resident of Chumphon province with the highest percentage of 47 percent (almost half of total respondent). While the rest of 53 percent of visitor scatter among resident of capital city of Bangkok with 25 percent, following by 15.5 percent from other central provinces, 8.5 percent from southern provinces apart from Chumphon.

MCNP offer various activities including camping, wildlife watching, kayaking, sightseeing, photographing, nature learning, snorkeling, scuba diving and island hopping. The result indicated that activities in which visitor engaged the most at MCNP were mainly a light activities such as photo shooting, sightseeing, wandering and nature learning (see Figure 4.3) .While the more physical demanded activities such as swimming, kayaking, camping, snorkeling and diving etc. are much less engage among visitors at MCNP. *Note that the lower rate of water related activities maybe influence by the time of conducting the survey study.

Most visitor interviewed are in the age range of 25-30 years old (31percent), 31.-40 years old (28percent), 18-24 years of old (24.50 percent), older than 41(10.5percent) and the fewest group were the age below 18 (6percent). The age distribution of visitor suggests that visitor at MCNP came from wide range of ages but majority of them were adult and middle age group. Table 4.4 shows that a large number of visitors who visited Mu Ko Chumphon National Park had a minimum of university degree (bachelor level) with 66 percent followed by high school level or other level lower than bachelor degree with 21.50 percent and master degree or higher than bachelor level with 12.50 percent. The result indicated that visitor at Mu Ko Chumphon National Park are mostly educated people. As for monthly income majority of visitors have an average income between 15,000-25,000 baht per month (35 percent) followed by visitors with monthly income less than 15,000 baht(23.50 percent), above 25,000 baht(22.50 percent) and the fewest group of visitor with no income(19 percent). This shows that visitors at MCNP are mostly come from lower to upper middle class group of people.

Table 4.5 Visitor demographics at Mu Koh Chumphon National Park (N=200)

| Variables | Categories | Percent | Cumulative |
|------------------------|----------------------------|------------|------------|
| Age | Less than 18 | 6 | 30.50 |
| | 18-24 | 24.50 | |
| | 25-30 | 31 | 69.5 |
| | 31-40 | 28 | |
| | Older than 41 | 10.50 | |
| Total | | 100 | 100 |
| Education level | High school and others | 21.50 | 21.50 |
| | Bachelor level | 66 | 78.50 |
| | Higher than bachelor level | 12.50 | |
| Total | | 100 | 100 |
| Income(monthly) | No income | 19 | 42.50 |
| | Less than 15,000 | 23.50 | |
| | 15000-25000 | 35 | 57.50 |
| | Above 25,000 | 22.5 | |
| Total | | 100 | 100 |

Table 4.6 Weight average index of different factors for visiting MCNP

| Variable reason to come visit MCNP | 1 st rank (1=score) | 2 nd rank (0.5=score) | 3 rd rank (0.33=score) | Total | WAI | Priority |
|--|-----------------------------------|-------------------------------------|--------------------------------------|-------|------|----------|
| Close to nature | 79 | 79 | 26 | 184 | 0.69 | 2 |
| Observe/Encounter wildlife | 2 | 30 | 33 | 65 | 0.43 | 5 |
| Spend time with friend or family | 93 | 55 | 28 | 176 | 0.74 | 1 |
| Break from routine | 11 | 20 | 63 | 94 | 0.44 | 4 |
| Enjoy new experiences/ new activities | 15 | 16 | 50 | 81 | 0.49 | 3 |

4.1.2 Visitors motivation for visiting MCNP

As shown in the table 4.6, from total 200 visitors interview conducted the most important factor of motivation for visitors to visit MCNP is to spend time with friend or family with the highest weight score of 0.74 while the second most important factor is to be close to nature and the third primary reason for spending time at MCNP is to enjoy new experiences and new activities. The least important factor for visitor to come visit MCNP is to observe and encounter wildlife with only 0.43 score. This result suggest that although visitor may come at MCNP to be close with all the element of natural features and experiencing new things however the social factor like spending time with family or friend still be the most important motivation factor for people to visit national park.

4.2 Visitors perception about environmental impact

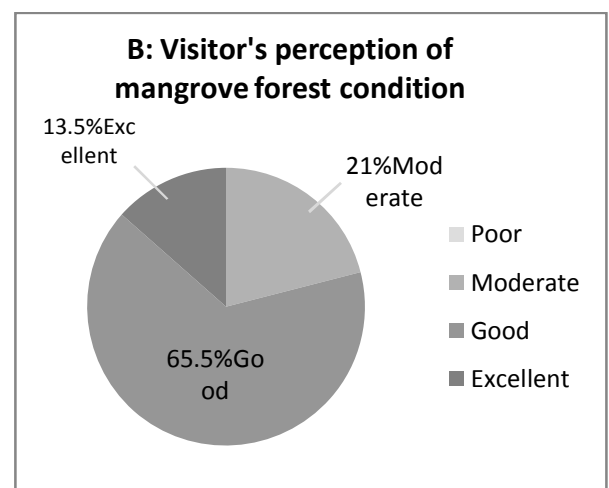
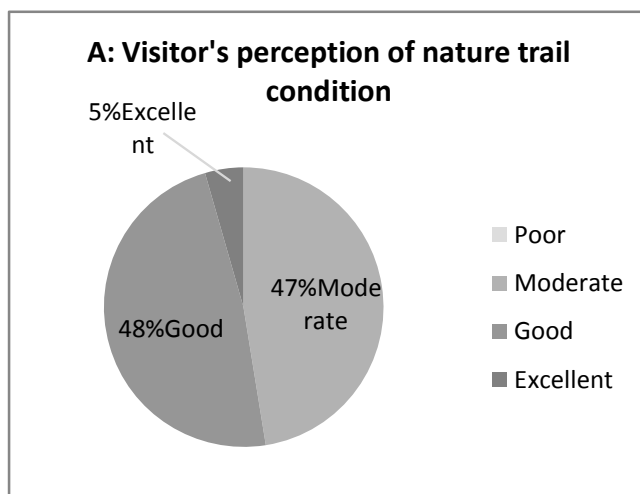
Table 4.7: Perception regarding visitors' presence and environmental impact

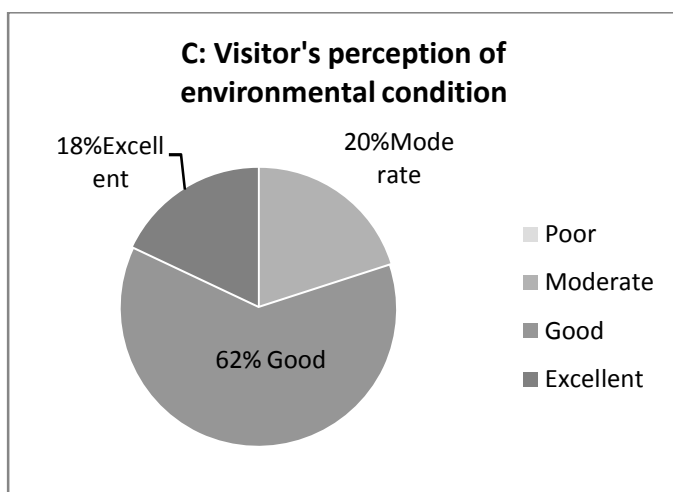
| Can their own presence at MCNP have negative impact to the NP | Counts | Percent |
|---|--------|---------|
| Yes | 118 | 59 |
| No | 45 | 22.50 |
| Not sure | 37 | 18.50 |
| Total | 200 | 100 |

4.2.1 Visitors perception regarding whether their own presence can have any impact to the park

From the result of pre-survey with 30 visitors at MCNP we found that when ask whether tourism activities can have negative impact to the park 29 out of 30 have responded “yes”. However from the actual survey conducted with 200 visitors at MCNP, as shown in table 4.7 we found that when asked if their presence can have any negative impact to MCNP or not, the results were quite different. Table4.7 shows that the level of awareness whether their own presence can have an impact to MCNP has dropped significantly with only 59 percent (118 visitors) realized that their own presence can have a negative impact to MCNP. While 22.50 percent (45visitors) don't realized that their presence can have negative impact to the park and 18.50 percent (37visitors) were not certain of about it. These results are consistent with the study of Priskin and Symmonds which stated that visitors often neglected of their own impacts but they usually do realized that others visitor can cause impact (Priskin, 2003; Symmonds et al., 2000). Also support by study about recreational on the beach in Australia done by Orsini and Newsome (2005) which found that 80 percent of visitors acknowledged that they do observed other visitors disturbing wildlife but they do believe that their own presence have no impact to wildlife.

4.2.2 Visitors perception on overall environmental condition in MCNP





Figures 4.4: A-C = Visitors perception on mangrove forest condition, nature trail condition and overall environmental condition at MCNP

As shown in Figures 4.4 A, B and C, visitors perceived the mangrove forest condition and overall environmental condition at MCNP generally as in good level with 65.5 percent and 62 percent respectively. While a small percentage of visitors perceive the condition of mangrove forest and overall environmental condition of MCNP as in excellent level but none stated both of it as in poor condition. However, the result of visitor's perception on nature trail condition were somewhat mixed between both good and moderate condition with 48 percent stated as in good level and 47 percent stated as in moderate level. These results were in line with the casual interview and observation surveyed done with MCNP officer. As found that, the current condition of nature trail are noticeably degraded at some level. Due to the fact that nature trail at MCNP were built by wooden material not with concrete and it's been rotten and degraded over time which required fixing and maintenance. The result reveals that most visitors in general observed the mangrove forest and overall environmental condition at MCNP as in good level but for the nature trail visitor has already begin to noticed the degraded condition thus the result were mixed between good and moderate level.

Table 4.8: Weight average index of concern future tourism impact from visitor

| Type of concern tourism impact at MCNP | 1 st rank | 2 nd rank | 3 rd rank | Total | WAI | Priority |
|--|----------------------|----------------------|----------------------|-------|------|----------|
| Garbage management and litter issues | 146 | 34 | 10 | 190 | 0.88 | 1 |
| Mangrove degradation issues | 15 | 84 | 29 | 128 | 0.52 | 2 |
| Water pollution issues | 20 | 42 | 51 | 113 | 0.51 | 3 |
| Wildlife impacts issues | 2 | 18 | 51 | 71 | 0.39 | 6 |
| Coral bleaching | 5 | 9 | 25 | 39 | 0.46 | 5 |
| Overcrowding and noise impact issues | 12 | 13 | 34 | 59 | 0.50 | 4 |

4.2.4 Visitor perception regarding concern of tourism impact at MCNP

As shown in Table 4.8, the tourism impact in which visitors concern the most was garbage and litter management issues with the highest weight score of 0.88. The second most concern impact is about mangrove degradation issue with weight score of 0.52 while water pollution issue is the third most concern among the top three primary concern of impact from tourism development and visitor. The least tourism impact in which visitors concern of is wildlife impact issues. These results are in consistent with the result of impact visitor observed the most during their stay at MCNP which indicated that concern of tourism impact were mainly influenced by the impact visitors observed in the park during their stayed.

Table 4.9 Different impacts visitor noticed during their stayed at MCNP

| Impacts visitor noticed during their stay at MCNP(open questioned) | Counts | Percentage (Each out of 200) |
|---|---------------|-------------------------------------|
| Garbage and litter | 87 | 43.50 |
| Sewage and water pollution | 27 | 13.50 |
| Wildlife disturbance | 9 | 4.50 |
| Noise pollution | 8 | 4 |
| Damage to facility | 8 | 4 |
| Not see any impact | 96 | 48 |

In this study, visitors were asked during their visit at MCNP with open question whether they observed any negative impact occurred within the park. The result in table 4.9 shows that impact visitor observed the most was garbage and litter with 43.50 percent. This was followed by the sewage and water pollution (13.50percent), wildlife disturbance (4.5 percent), noise pollution (4 percent) and damage to facility (4percent). However, the study also found that almost half of visitor with 96 respondents (48 percent) did not observed any impact during their stayed at MCNP. These results correspond with the perception of overall environmental condition of the park which suggests that visitors at MCNP perceive the natural condition of the park as in a very good level with low level of impact observed. While most of the impact observed by visitor is garbage and litter around mangrove forest areas, MCNP officer claimed that the garbage and litter was mostly came from the tide wave washed up on shore with another source also came from visitors. Some visitor also mentioned that they noticed that sewage water from toilet was released directly back into mangrove forest areas inside MCNP.

Table 4.10: Visitor opinion on construct more visitor facilities at MCNP

| MCNP need to construct more visitor facilities | Count | Percent |
|---|--------------|----------------|
| Yes | 53 | 26.50% |
| No | 101 | 50.50% |
| Maybe/Nor sure | 46 | 23% |
| Total | 200 | 100 |

Majority of respondents express less support for construct more visitor facilities at MCNP as shown in Table 4.10 with more than half of visitors stated that MCNP don't need to build more visitor facilities while only 26.50 percent want MCNP to build more visitor facilities. The result suggest that majority of visitors who came to MCNP either already satisfied with the facilities that the park provided or preferred less development within the park. These results are consistent with the study of Buckley & Pannell (1990) which find that visitor who visiting national park in Australia and the United States, mostly prefer little or no development inside the park.

Table 4.11: Percentage of visitor stated their willingness to comeback

| Will visitor comeback to MCNP | Count | Percent |
|--------------------------------------|--------------|----------------|
| Yes | 158 | 79.40% |
| No | 4 | 1.51% |
| Maybe/Nor sure | 38 | 19.10% |
| Total | 200 | 100 |

As shown in Table 4.10, the expected percentage of returning visitor is very high (79.40%) which suggest that most visitors were quite satisfied with the experienced they had at MCNP. While only 1 percent of visitor stated not to return to MCNP and about 19 percent of visitor have stated that they are not sure about it. The high returning rate also reflects that MCNP would likely to see the increase of visitor number in the future.

4.3 Factors influencing visitors' perception regarding environmental impact issues

Table 4.12: Visitors' perception whether their presence can have an environmental impact to MCNP in relation to different variables of age, income, education level and duration of stay.

| Education level of visitor | | Visitors' presence can have negative environmental impact (1=yes, 2=no, 3= not sure) | | | Total | P-value = 0.870 DF= 4 |
|---|---------|--|-------|-------|-------|--------------------------|
| | | 1 | 2 | 3 | | |
| High school or lower level than bachelor degree | Percent | 53.49 | 27.91 | 18.60 | 100 | |
| | Count | 23 | 12 | 8 | 43 | |
| Bachelor degree | Percent | 61.36 | 20.45 | 18.18 | 100 | |
| | Count | 81 | 27 | 24 | 132 | |
| Above Bachelor degree | Percent | 56 | 24 | 20 | 100 | |
| | Count | 14 | 6 | 5 | 25 | |
| Duration of stays | | Visitors' presence can have negative environmental impact (1=yes, 2=no, 3= not sure) | | | Total | P-value = 0.012 DF= 2 |
| | | 1 | 2 | 3 | | |
| One day trip | Percent | 52.82 | 27.46 | 19.72 | 100 | |
| | Count | 75 | 39 | 28 | 142 | |
| Overnight stay (more than one day) | Percent | 74.14 | 10.34 | 15.52 | 100 | |
| | Count | 43 | 6 | 9 | 58 | |
| Variable | | P-value | | | | |
| age | | 0.111 | | | | |
| Income | | 0.69 | | | | |

Chi-square test, $p < 0.05$

The results in table 4.12 shows that socioeconomic backgrounds of visitor in term of age, income and education level have no significant effect on visitors' perception regarding the awareness of their own impact to MCNP with all variable gain p-value more than 0.05(education level= 0.87, age=0.11 and income 0.69).

However the result in table 4.12 also shows that the factor in duration of stay in the park can have an influence on the perception of visitor regarding the awareness of their own impact to the park. As the group of visitor who stay just for one day tend to have lower awareness that their presence can have an environmental impact to the park compare to visitor who stay longer than one day with 0.012 significance level .

Table 4.13: Visitors' environmental impact concern in relation to time spent

| Duration of stay | | Environmental impact concern(1= not at all -4= very concern) | | | | Total | P-value = 0.005 DF= 3 |
|---------------------|---------|--|-------|-------|-------|-------|--------------------------|
| | | 1 | 2 | 3 | 4 | | |
| One day trip | Percent | 7.75 | 45.07 | 39.44 | 7.75 | 100 | |
| | Count | 11 | 64 | 56 | 11 | 142 | |
| Longer than one day | Percent | 1.72 | 25.86 | 53.45 | 18.97 | 100 | |
| | Count | 1 | 15 | 31 | 11 | 58 | |

(Chi-square test, $p < 0.05$)

The result in table 4.13 shows that the factor in duration of stay has an influence on the perception of visitor regarding environmental impact concern with significant value of 0.005. Since visitors who have stayed longer at MCNP have placed considerably higher level on environmental impact concern in comparison to visitor who visits MCNP just one day trip which placed the environmental impact concern at considerably much lower level.

Table 4.14: Visitors rating of overall environmental condition in relation to duration of stay

| Duration of stays | | Visitors' perception of overall environmental condition(1=very poor,2=poor,3=moderate 4= good, 5= excellent) | | | | | Total | P-value = 0.005 DF= 6 |
|------------------------------------|---------|--|---|-------|-------|-------|-------|--------------------------|
| | | 1 | 2 | 3 | 4 | 5 | | |
| One day trip | Percent | 0 | 0 | 16.90 | 60.56 | 22.54 | 100 | |
| | Count | 0 | 0 | 24 | 86 | 32 | 142 | |
| Overnight stay (more than one day) | Percent | 0 | 0 | 27.59 | 65.52 | 6.90 | 100 | |
| | Count | 0 | 0 | 16 | 38 | 4 | 132 | |

(Chi-square test, $p < 0.05$)

As shown in table 4.12 the significance level of 0.005 indicated that the variable in term of how much time visitor spent in the park can had an effect on visitor perception regarding overall environmental condition at MCNP. Since visitor who stays shorter period of time (only for one day) at MCNP did perceive a higher quality level of environmental condition with 22.54 percent stated as in excellent condition while visitor who stay longer than one day had perceived environmental condition lower level with only 6.90 percent stated the environmental condition at MCNP as in excellent condition and 27.59 percent stated as in moderate quality level. Thus the implication is that duration of stay can have an influence on how visitors perceive the environmental condition of that national park which they have been visited.

Table 4.15 Variable of education level, income and age in relation to visitors' perception of environmental condition

| Variable | P-value : Visitor perception of overall environmental condition | P-value: Visitor perception of mangrove forest condition |
|------------------------|--|---|
| Education level | 0.076 | 0.14 |
| Income | 0.06 | 0.084 |
| age | 0.399 | 0.114 |

(Chi-square test, $p < 0.05$)

The study found that visitor socioeconomic variable in term of age, income and education have no effect on visitor perception regarding overall environmental condition or mangrove forest condition at MCNP as shown in table 4.15 with all the variable have the significance value above 0.05. This results support the study hypothesis that different group of visitors would rate the environmental condition similarly when the overall natural condition is still in good level. While the study by Sangsun conducted at KYNP in 2010 found that visitor ratings the environmental condition were highly influenced by education levels, income and education level (Sangsun 2010). The major different worth pointing out is that in Sangsun study KYNP considered as having a high level of visitor impact therefore it's understandably for visitor to perceive and rate the environmental condition in different level compare to MCNP in which visitor impact is still in a very low level thus visitor mostly stated it as in either good or excellent condition regardless of the variables such as age, income and education.

4.4 Factors influencing visitors' perception about entrance fee issues

Table 4.16: Importance level of free entrance fee of NP to visitor in relation to visitor group of age

| Age range | The importance level of Free entrance fee for visitor (Percent) (5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1= not important at all) | | | | | Chi-square test ($p < 0.05$) |
|------------------|--|----------|----------|----------|----------|---|
| | 1 | 2 | 3 | 4 | 5 | P value = 0.030 |
| Less than 24 | 17.65 | 22.50 | 33.90 | 26.09 | 44.74 | |
| 25-30 | 11.76 | 40 | 23.73 | 39.13 | 31.58 | |
| above 31 | 70.59 | 37.50 | 42.37 | 34.78 | 23.68 | |
| Total | 100 | 100 | 100 | 100 | 100 | |

From the table 4.16, the result indicated that variable in term of visitors' age can have an effect on their opinion regarding the important level of free entrance fee. The results

suggest that younger visitor group of age seems to perceived free entrance fee as more important factor for them in contrast to the group of older visitor which seems to see it as less important factor for them. The relationship can be clearly illustrated in the percentage of row 5 (very important) in which the percentage decrease as oppose to the increase of age groups.

Table 4.17: Importance level of free entrance fee of NP to visitor in relation to visitor education levels

| Education levels | | The importance level of Free entrance fee for visitor (5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1= not important at all) | | | | | Total | Chi-square test (p< 0.05) |
|--|---------|---|-------|-------|-------|-------|-------|---------------------------|
| | | 1 | 2 | 3 | 4 | 5 | | |
| High school or lower level than bachelor degree | Percent | 11.63 | 11.63 | 16.28 | 30.23 | 30.23 | 100 | P-value = 0.004 DF=8 |
| | Count | 5 | 5 | 7 | 13 | 13 | 43 | |
| Bachelor degree | Percent | 4.55 | 22.73 | 33.33 | 21.21 | 18.18 | 100 | |
| | Count | 6 | 30 | 44 | 28 | 24 | 132 | |
| Higher than Bachelor | Percent | 24 | 20 | 32 | 20 | 4 | 100 | |
| | Count | 6 | 5 | 8 | 5 | 1 | 25 | |

The result in table 4.17 shows that there is a relationship between education levels and the importance level of free entrance fee. The group of visitor with higher level of education perceived the factor of free entrance fee as not very important to them compare to the group with lower education. However, the group of visitor with lower education perceived the factor of free entrance fee as very important for them to visit national park. The reason behind this difference should be due to that people with lower education level possibly have lower income level, thus they would saw free entrance fee as more beneficial to them.

Table 4.18: Visitors opinion on cheaper entrance fee in relation to education level

| Education levels of visitor | | Visit often if the entrance fee cheaper (1=yes, 2= no, 3= not sure) | | | Total | |
|--|---------|---|-------|-------|-------|--------------------------|
| | | 1 | 2 | 3 | | |
| High school or lower level than bachelor degree | Percent | 44.19 | 30.23 | 25.58 | 100 | P-value = 0.004 DF= 4 |
| | Count | 19 | 13 | 11 | 43 | |
| Bachelor degree | Percent | 33.33 | 52.27 | 14.39 | 100 | |
| | Count | 44 | 69 | 19 | 132 | |
| Above Bachelor degree | Percent | 16 | 64 | 20 | 100 | |
| | Count | 4 | 16 | 5 | 25 | |

Chi-square test, p< 0.05

In this study we asked visitor whether they will visit national park more often if entrance fee is to be cheaper than the current price. As shown in table 4.18 there is a relationship between education level and the respond on this question with P-value of 0.004(significant at 5 percent). The result indicated that visitor with lower education level (in this case lower level than bachelor degree) have a higher percentage to respond “yes” (yes= will visit more often if entrance fee is cheaper) with 44 percent answered yes and 30 percent responded no. However in visitor group with bachelor degree or higher than bachelor level, the percentage of visitor respond with yes dropped significantly. The visitors with bachelor degree stated Yes (33.33 %) and No (52.27 %) while visitor with higher degree than bachelor stated Yes (16%) and No (64%) The result clearly shows that education level of visitor play a significant influence on visitor perception regarding entrance fee issue. Also people with lower education level have a tendency to think that they will visit national park more often if entrance fee is cheaper.

Table 4.19: Visitor perception on cheaper entrance fee in relation to resident areas

| Resident areas of visitor | | Visit often if the entrance fee cheaper (1=yes, 2= no, 3= not sure) | | | Total | P-value = 0.001 DF= 8 |
|---------------------------|---------|---|-------|-------|-------|------------------------------|
| | | 1 | 2 | 3 | | |
| Bangkok | Percent | 14 | 72 | 14 | 100 | |
| | Count | 7 | 36 | 7 | 50 | |
| Chumphon | Percent | 39.36 | 38.30 | 22.34 | 100 | |
| | Count | 37 | 36 | 21 | 94 | |
| Others provinces | Percent | 41.07 | 46.43 | 12.50 | 100 | |
| | Count | 23 | 26 | 7 | 56 | |

Chi-square test, $p < 0.05$

As shown in table 4.19, the study found that factor of residential areas of visitors can have an influence on their opinion on cheaper entrance fee issue with p-value of 0.001 at (significant at 5 percent level of confidence). As visitor who resides in Bangkok mostly stated that cheaper entrance fee would not make them visit national park more often with 72 percent answered “No” and only 14 percent said “Yes” (would visit more often). While visitor who resides in Chumphon do have a different opinion on this issue with around 39 percent stated “Yes” as they would visit more often if entrance fee is cheaper and 38.30 percent stated “No”. The result point out that visitor from Chumphon has higher price sensitivity on entrance fee more than visitor who comes from Bangkok. This may be due to the reason that visitor living in Chumphon feel that they can easily visit MCNP on a daily or weekly basis so they perceived the price as more of an important factor. While the cost of entrance fee for visitor from Bangkok is not that much of an important factor when compare to the cost of travel which is considerably much higher.

4.5 Factor influencing visitor perception regarding importance of small number of visitor and facilities provided at MCNP

Table 4.20: Importance level of small number of visitor in relation to variable of education level and income

| Variable | Importance level of small number of visitor |
|-----------------|---|
| | P-value(alpha level=0.05) |
| Education level | 0.69 |
| Income | 0.69 |

Table 4.20 shows that regardless of the differences in education level or income level of visitors, majority of visitors still placed small number of visitor as an important factor to their visit. In other word, a less crowded experience is valued by all visitors regardless of the social status they may come from.

Table 4.21: Visitors perception regarding important levels of facilities provided at National Park in relation to education level

| Education level of visitor | | Importance level of facilities provided at National Park(Percent) | | | | | Total | P-value = 0.005 DF= 6 |
|---|---------|---|------|-------|-------|-------|-------|------------------------------|
| | | 1 | 2 | 3 | 4 | 5 | | |
| High school or lower level than bachelor degree | Percent | 0 | 2.33 | 20.93 | 32.56 | 44.19 | 100 | |
| | Count | 0 | 1 | 9 | 14 | 19 | 43 | |
| Bachelor degree | Percent | 0 | 6.82 | 22.73 | 46.97 | 23.48 | 100 | |
| | Count | 0 | 9 | 30 | 62 | 31 | 132 | |
| Above Bachelor degree | Percent | 0 | 20 | 36 | 32 | 12 | 100 | |
| | Count | 0 | 5 | 9 | 8 | 3 | 25 | |

Chi-square test, $p < 0.05$: (5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1= not important at all)

As shown in table 4.21, the significance level at 0.005 indicated that visitor with various education level placed an importance value of facilities provided in national park differently. The result shows that visitor with higher education level placed lower importance of the need for having facilities provided in national park (only 12% for above bachelor level and 23.48% for bachelor level: as 5= very important) while compare to visitor with high school or lower than bachelor level they saw facilities provided in national park as very important with much higher percentage with 44.19 percent. The result indirectly suggest that visitor with higher education might understand that provided visitor facilities is not a primary function for national park as it's not established to serve as tourism destination. However, visitor with lower education level seems to see the convenient factor as very important for them for visiting national park or possibly see

national park similar to another tourist destination which demand to have all the facilities provided for tourist.

4.6 Visitor willingness to pay

Model construction

The first step was to exclude the 16 (8% of the sample) “protest” respondents that did not accept the idea that individual citizens should not be paying for a “public good”, and that Government should take the sole responsible for maintaining the environment. Later, an additional 3 respondents were excluded since they were clear outliers on at least 3 variables. Therefore the estimations are based on the remaining 181 respondents’ information.

A first probit model was constructed with a large initial set of variables including respondents’ characteristics and stated opinions about the environment, the status of the park (Table 4.22). The two formulations of the potential impact of income “linear” and “varying parameters” were tested. A second set of model was estimated after eliminating the variables that were not significant and showed unexpected signs.

Table 4.22: Variables and their expected influence on visitors WTP

| Variables | Classes | Expected Correlation |
|-------------------------------|------------------------------------|--|
| Age | <24;25-30;>30 | ++ |
| Education | 3 classes from low To high | + |
| Origin | Chumphon; BKK; Rest of Thailand | ? |
| Occupation | Other; Business; Student | Student:- ; Other: ? |
| Importance of Env. | 3 classes from low To high | + |
| Envi. Condition of Park | 3 classes from low To high | - (if the environment is good there is no need to pay) |
| Mangrove Condition | 3 classes from low To high | - |
| Trail Condition | 3 classes from low To high | - |
| Probability of future deg. | low; high | + |
| Effectiveness of project | low; high | + |
| Bid | Continuous | - - |
| Bid x Income | 3 Classes | Higher income lower effect of bid |

Table 4.23 Model results

| | Coefficient Estimate | Std. Error | P-value |
|--------------------|-----------------------------|-------------------|----------------|
| Age(25-30) | 0.277 | 0.510 | 0.586 |
| Age(>30) | 1.300 | 0.622 | 0.036* |
| Education | 0.560 | 0.407 | 0.169 |
| Stay>1day | -0.600 | 0.421 | 0.154 |
| BKK | -0.020 | 0.461 | 0.964 |
| Rest of Thailand | 0.557 | 0.424 | 0.189 |
| Business | -1.020 | 0.451 | 0.023* |
| Student | -0.434 | 0.521 | 0.404 |
| Importance of NP+ | 0.308 | 0.378 | 0.414 |
| Importance of NP++ | -0.128 | 0.432 | 0.767 |
| Env Cond+ | 0.379 | 0.438 | 0.386 |
| Mangr Cond+ | 0.113 | 0.465 | 0.807 |
| Mangr Cond++ | -0.898 | 0.696 | 0.197 |
| Trail Cond+ | -0.001 | 0.336 | 0.996 |
| Trail Cond++ | 0.380 | 0.795 | 0.631 |
| Prob Degrade | -0.431 | 0.358 | 0.228 |
| Effect Proj | 1.408 | 0.348 | 5.28e-05 *** |
| Bid | -0.063 | 0.055 | 0.256 |
| Bid x Income | -0.025 | 0.032 | 0.4181 |

Note: *P < 0.05; ***P < 0.001

The estimation of the models with all variables is presented in Table 4.23. Judging by Akaike Information Criteria, the varying parameter (VP) formulation did not bring additional information. Besides the effects of bid and of income on reaction to bids were not significant under the VP model. The income level of participants did not show large impact on their willingness to pay.

Age showed a significant impact, with older person showing greater level of willingness to pay. The model tested the difference of behavior of citizens of Chumphon where the park is localized, with people from Bangkok and people from the rest of the country. In general people outside Chumphon province are likely to pay more than Chumphon citizens. However, only the “rest of Thailand” category showed significant difference. A possible interpretation is that those persons have been traveling from large distance to visit the place and are likely to give a higher value to the park. Since interviews were conducted with visitors only, some selection bias was introduced in the analysis (we select the people that give high value to the park).

The test of occupation showed also some significant impact for people owning businesses and student being significantly less likely to pay for the environment than the other categories of occupation. However in this study, education level shows no significant impact on willingness to pay.

The impact of concerns about the environmental impact problems at various tourism destination in Thailand were not significant and of ambiguous signs (positive for important

concern, negative for very important concern). This inconsistency of impact lead us to discard the variable in the final model.

Specific questions about the current status of the environment in the park showed ambiguous and not significant results. The variables “mangrove condition” and “trail condition” had successively positive and negative impact as their level increased. Those variables were discarded in the final formulation of the model.

The impacts of the current overall evaluation of the environment on WTP were also evaluated. The overall environmental condition showed unexpected positive sign, which people are more likely to pay if the environment is good but were not significant. The positive sign could be interpreted as an increase in WTP for projects that are worth it. In other words, those persons who felt the degradation was more important saw less need to pay for that already degraded environment. In the same vein, interviewees were asked to evaluate the probability of a degradation occurring at a level such they would not be returning to the park. One would expect that if you anticipate with high probability of degradation and that you value the park, you would be willing to pay for its preservation. However, results showed negative but not significant impact. This seems to indicate a behavior where only places less likely to be degraded are worth investing in. Given that ambiguity, and the non-significance the variable was discarded in the final models.

Finally, the effect of project variable (i.e. the level of confidence respondent's had on the proposed project to be successful) was positive and highly significant (the more you trust in the project, the more you are likely to pay). As second run of models was run (Table 4.24). The model showed an improvement in the AIC value (although the number of variables decreased), thus are showing better fit. Effects of remaining variables did not change, except for the variable of localization, where people from Bangkok showed less probability of payment than Chumphon interviewees. However, the origin of the respondents ceased to be significant.

We used the coefficients of this last model to evaluate the median willingness to pay (using equation 8).

The results are showing a mean WTP of THB 28 per entry that should be compared with the current THB 40 per entry (that is 70% of the actual entry fee). The VP formulation gives a differentiation of the WTP according to income classes of around 7 THB per entry which is less than the standard deviation of the WTP explaining the little power of explanation of the VP model.

The WTP was heavily negatively affected by the fact that many visitors had low expectations about the effectiveness of protection/improvement projects. This could be due to two facts: (a) the documentation provided was insufficient to convey the idea that the proposed projects would be effective in changing the quality of the environment, and (b) the trust in the administration in charge of the management of national park is low. While efforts were made to convey a positive message to the possible effectiveness of the program (and probably could be improved with more focused documentation), the second possibility would probably deserve further researches.

One of the weaknesses of the study is that the median WTP found is higher than the highest bid proposed to the respondents (see, Table 4.24). This means that the results are probably biased towards low values of WTP. Higher bids would probably have still

encountered positive answers and provided higher WTP results. Although pretest information oriented the choice of bid levels, the potential WTP of the visitors was probably underestimated. Literature suggest that we should allow at least two iterations to contingent valuation survey so adjustments can be made to the bids proposed (Haab and McConnell, 2002): the first iteration provides an ex-ante estimate of the distribution of WTP and this information can be used to improve the design for the second iteration of the survey. Limited time is preventing us to carry on a second round of survey.

Table 4.24: Evaluations of WTP based on survey results

| WTP (THB/entry) | Linear | Varying Parameters | |
|--------------------|--------|--------------------|-------------|
| | | Low Income | High Income |
| mean | 28.50 | 24.45 | 31.86 |
| median | 27.92 | 25.35 | 30.71 |
| sd | 10.58 | 9.76 | 10.62 |

Table 4.25: Final Model results

| | Coefficient | Std. Error | P-value |
|-------------------|-------------|------------|--------------|
| Age(25-30) | 0.347 | 0.439 | 0.428 |
| Age(>30) | 0.927 | 0.475 | 0.051** |
| BKK | -0.146 | 0.348 | 0.674 |
| Rest of Thailand | 0.485 | 0.356 | 0.173 |
| Business | -0.926 | 0.379 | 0.014 * |
| Student | -0.350 | 0.433 | 0.419 |
| Effective Project | 1.261 | 0.283 | 8.88e-06 *** |
| Bid | -0.092 | 0.027 | 0.0008*** |
| Bid x Income | 0.001 | 0.027 | 0.951 |

Note: *P < 0.05; ** P < 0.1; ***P < 0.001

4.7 Discussion

Successful tourism management in protected areas or national park should integrate the knowledge of visitor characteristics and visitor perception (Buckley & Pannell, 1990; Morin et al., 1997). In this study, face to face interview have been conducted with 200 visitors inside MCNP. The number of sample size derives from average annual visitor number from year 2006-2010 (24334 people) calculate with Yamne Taro formula $\pm 7\%$ Precision Levels. The percentage result shows that almost half of total visitor are first time user with 50.50 percent while 49.50 percent come as returning visitor. Moreover more than 79 percent had stated their desire to comeback to visit the park in the future. These result support our assumption that visitor would likely to increase in the future at MCNP.

The study shows although nature and environmental features at MCNP are an important motivation factor for visitors to visit the park however, social factor such as spending time with family members and friends still being regarded as the most important motivation factor for visitor. The result give another aspects to other studies which found that visitors main motivation in visiting national park or marine park were to experiencing the natural feature of the park (Shafer& Inglis 2000, Williams & Polunin 2000, Barker 2003, Lynn & Brown 2003).

The study test different variables which assume to affect visitors' perception such as age, education level, income, resident areas, duration of stay etc. and analyze it in relation to environmental impact related issues and other visitor management issues at MCNP.

From the investigation of visitors' perception on overall environmental condition, mangrove forest and nature trail condition at MCNP, the study found that perception of visitor were not much different from perception of manager at MCNP. Visitor and managers of MCBP both stated the mangrove forest and overall environmental condition at MCNP as in either good or very good level. While for nature trail condition both sides were similarly stated the level as in moderate condition with associated to the need for fixing and maintenance. This implies that visitor already notice about the degraded physical condition of nature trail of the park.

The study found that duration of stay had an influenced on both how visitor evaluate the environmental condition and the level of their environmental impact concern. As visitors who spent time longer at the park would likely stated higher level of environmental impact concern and placed the environmental condition slightly lower level compare to visitor who stays only for one day. It could be explained that as a group of visitor who stay longer period of time at the park would have more chance to noticed the impact occurring or impact behavior therefore evaluate it differently than the group of visitor who spent shorter time in the park. Also it could be that the longer people stay the more their sense of belonging increase thus shows more concern to the park. These result supported by the study of Juutinen, et al.,(2011) which revealed that factor such as time visitor spent at the park can affect their perception of how they value different features of the park.

However, visitor variable in term of ages, education and income have show no significant effect on visitors' perception regarding their rating of environmental condition and mangrove forest condition at MCNP. As overall environmental condition at MCNP is considered to be in a very good condition, this explains why most visitors evaluate the environmental condition at MCNP similarly either good or excellent level regardless of their socioeconomic background. This finding is inconsistent with the study conducted at KYNP by Sangsun (2010) which stated that factors such as education level, ages or income

of visitor can affect their perception on how they evaluate the environmental condition of the park. Not only that manager and visitor at MCNP also perceive the environmental condition similarly in contrast to the study found at KYNP. However, it's important to note that the major difference between the two studies is that KYNP considered to already have a high level of biophysical impact at the park as a consequence of very high level of visitor used in contrast to MCNP which still have a very low impact level. The implication to this is that if the quality of environmental condition at the national park is generally viewed as in a good level then most visitor regardless of socioeconomic variable would rated it as in "good or excellent level" anyway but when the biophysical impact or environmental condition has been deteriorating to reach a certain level like in case of KYNP then visitor will begin to perceive the environmental condition differently which can be influenced by various factor such as age, education level and income level. However, the study found that duration of stay can also influenced visitor thought on issues like the level environmental impact concern on the site. As visitor who has spent time at the site longer usually placed a higher environmental impact concern level to the area they have been visited.

Visitors' general awareness that tourism or recreational activities can have environmental impact to MCNP is at very high level (based on pre-survey result). However, when asked whether their presence can have any negative impact to the park just 59 percent had responded while 41percent do not believed their presence can cause environmental impact to the park. This low level of awareness is surprising but the finding are also in consistent with past studies which found that visitors' awareness of their own impact is usually low but the awareness that others visitor can cause impact to the same resource that they are using is normally high (Orsini and Newsome 2005; Taylor and Knight 2003). The impacts that visitor noticed the most during their stay at MCNP are 1) garbage and litter (43.50%) 2) sewage and water pollution (13.50%) 3) Wildlife disturbance (4.5%) while about 48 percent don't observed any impact. While the result of visitor most concern tourism impact are 1) garbage management and litter issues 2) mangrove degradation issue 3) water pollution issue. This results was corresponded with the impact visitor observed during their stay at MCNP, it suggested that visitor most concern impacts are derived based on the impact in which visitor had observed in the park.

The study also found that education level did have an influence on visitors' perception regarding the importance of free entrance fee and cheaper entrance fee. Visitor with lower education level placed a very high importance valued to the factor of free entrance fee, cheaper entrance fee and facilities provided within the park. In contrast to visitor with higher education level which placed a lower importance valued to those factors. While most visitors regardless of different in socioeconomic variable did place a high importance valued to both factors of small number of visitor and nature & ecology of the park. The implications to manager is that visitor with lower education level most likely earn lower income thus, preferred the idea of not having to pay the entrance fee or cheaper entrance fee but in the same time also demanding the national park to provided them with high quality experience such as good environment, less crowed experience and convenient facilities. This finding has a significant implication to manager of MCNP as it has reveals the conflicting behavior of visitor which needs to have a better understanding and address at by manager. It also suggests that many visitors at MCNP still lack a good understanding of the primary role and function of national park in nature conservation and protection as visitor demand a high level of importance in term of facilities provided especially in the group of visitor with low education level. It is understand that visitors, who have the better

awareness on national park role in conservation etc, are more corporative to the decision with respect to pricing issues (Samdin et al., 2010). There is a need to improve in visitor education and communication at MCNP so that visitor who come visit the park in future can have better understanding of the role and function of the national park. By improving visitor education about the role and function of national park visitor would be more aware of their own impact and not to misinterpreted national park as another tourism destination like commercial resort.

Moreover factors in origin of visitor also affect their opinion regarding entrance fee issue. Since visitor who residential area are close to the national park, in this case visitor who live in Chumphon up to 39 percent stated that cheaper entrance fee will make them come visit national park more often while visitor reside in Bangkok stated only 14% would visit national park more often. The implication is that visitor who live in Chumphon would feels that they live not so distant away from the national park and likely have plenty of chance to visit the park on a regular basis if the price is cheaper. While most visitor who resides in Bangkok as the city don't live near MCNP therefore most people stated that a factor of cheaper entrance fee wouldn't affect how often they would visit the national park as they might think that they would only travel to national park once in a while. Noted that during the survey we also found that some visitor from Chumphon as they found that they have to pay entrance fee, they decided to leave without entering the park. All of these results and survey observation show that the pricing issue of entrance fee is likely more sensitive to visitor from Chumphon who live nearby MCNP.

From the investigation of WTP, we found that variable of income did not have significant impact on WTP of visitor at MCNP which is quite unusual and in contrast to the study of Samdin (2010) which found that income factor had a significant influence on visitor WTP at Taman Negara National Park. This may be due to the fact that the study set the bid value towards too low level, which also reflects in median WTP (27.92 baht) which is higher than the highest bid propose (20 baht).

However in term of variable in ages we found that older group of visitor shows a higher level of WTP for the conservation program of the park which also similar to the finding of Arin (2002) which found that "Younger people are likely to have greater inclination to donate to environmental preservation". In this study we also test the origin factor which assume to affect WTP particularly with visitor from Chumphon province compare with the rest of visitor who come from outside Chumphon. In which we found that visitor from outside Chumphon province are likely to pay more than visitor who's from Chumphon. This finding was support by the previous result on chi-square test which revealed that visitor from Chumphon province have placed a greater value for cheaper entrance fee which indicated that pricing issue are more sensitive to them than the rest of visitor group who live outside chumphon province. This could be due to that visitor who come from outside chumphon have to travel a greater distance to visit MCNP thus they don't seems to bother too much about the pricing issue as the travel cost is already much higher while they may only visit MCNP not so often or maybe once. As expected by the study, the confidence level towards the propose program was complied with the assumption that the higher confidence people have with the program the more likely they would be willing to pay for it.

It's interesting to point out that the situation and the challenge that MCNP facing in many ways are similar to the situation of many NP in Thailand. Nowadays, it's very clear that many NP in Thailand have put a very high importance on how to attract more visitors to the park and how to facilitate visitors inside the park. One of the clear evidence which have been widely debated among conservationists and recreationists in public is about the decision to build a cable car at Phu Kradueng National Park, while the supporter of the project has claims that the project would allow all people to access to the site however, many people don't agree with such decision as they worried that this will lead to severe environmental impact to the site. It has been proving that this kind of action in fact has left many NP in Thailand facing with serious visitor impacts issues. It seems that many NP in Thailand, through time and external factors has slowly lost or forget their main duty in terms of protection and conservation instead emphasizing too much on serving tourism services. Although most park authorities may argue that tourism is their main source of income, the recent development of the NP in Thailand is highly questionable in a way that "What is the main priority role of NP in Thailand either for serving visitor satisfaction or preserve the ecological resources of the country?"

Another implication from the study is that by developing visitor facilities too much inside the park, this could lead to sending the wrong message to visitors as the park's first priority is not to facilitate visitors like commercial tourism spots but rather to protect the natural and ecological resources of the country. As the result of the study has indicated that many visitors may misinterpret the NP role and therefore behave and demand the service as such they were in a mass tourism area like resort or hotel.

In many aspects NP in Thailand nowadays has been treating like a mass commercial tourism area which try to attract all kind of visitors to the park. Certainly, tourism and visitor services is a part of NP role in most countries so tourism shouldn't be excluded but when its overlapping the core value of the park then we know that something is amiss. So the question to the manager of NP in Thailand is whether how far they should consider developing visitor facilities in relation to the impact it may cause to the park. Plus in this study we found that many visitors stated highly importance value for having facilities inside the park which suggest that some visitors might come to NP just for enjoying the facilities provided by the park more than come to appreciate nature and wildlife which is contradicted to many people believe and finding. As we above mentioned that NP in Thailand often offers with the high level of visitor services compare to NP in other countries therefore it also attracts all kind of visitors to the park. Therefore this present another implication for NP manager since if they try to attract and satisfied all types of visitors the study prove that there will always be some visitor who demand a high level of services. In this case we sense that tourism has compromise the core value of NP and distract manager in prioritizing the management according to the primary role and function of NP. While manager at NP should focus on attract only specific group of visitors such as people who appreciate nature and wildlife but nowadays they are having a mind set of trying to develop the facilities to provide the services to all types of visitors.

Chapter 5

Conclusion and Recommendations

5.1 Conclusion

The study on visitors' characteristic and perception at MCNP allows manager to understand more about visitor behavior, in which the result can help improving in planning strategy for visitor management of the park.

The study found that variables which can affect or influence perception of visitor at one particular national park destination such as age, education level, income etc. may not be applied in the same context at other destination. Since the situation of each national park is unique in itself, as shown in this study where there is no difference in rating of environmental condition between visitor and manager at MCNP and also among different visitor group themselves regardless of variable of socioeconomic background of visitor such as age, income and education level. The finding was similar to Lynn and Brown (2003) studied where they found that factor of education have a very low effect on visitor perception on environmental impact. While the study at one of the most popular national park destination in Thailand KYNP done by Sangsun (2010) found that socioeconomic background of visitor can significantly influence the perception on how visitor perceive the environmental condition. Although it's important to identifying the variable factor which could influence perception of visitor and support it with past literature. It's also important to look into a deeper context of the situation of national park when comparing various factors regarding certain issue between the two sites. Since the finding of same factor that affect visitor perception on the same subject is inconsistent with one another hence there must be a good reason behind it. In this case, it could be explain that a national park environment must reach a certain level of impact that begin to trigger the differences in visitors' perception regarding environmental impact condition of the park while this differences in perception can be influence by socioeconomic factors.

Impacts that visitor observed at MCNP included garbage and litters, sewage/ water pollution, wildlife disturbance, noise impact and physical damage to facility. However, it should be noted that almost half of respondent didn't notice any impact while staying at MCNP. The study found that variable in duration of stay can have an influence on perception of visitor with respect to their evaluation of environmental condition and environmental impact concern level. Since, the groups of visitor who had stay longer have a tendency to placed higher level of environmental impact concern and also perceive the environmental condition slightly lower than those who stay only for one day. The study also had revealed visitor conflict behavior in which many visitors who came to MCNP would placed a very high value of importance on natural environment quality of the park but in the same time also demand to have a high services and facilities provided within the park areas. The implication to the manager is that visitors who come to MCNP still not fully aware of the national park main role& function and how NP is difference from other commercial tourism destination like hotel or resort. In addition, the study finding has suspected that some visitors might come for using the facilities provided by the park more than come for appreciated natural and wildlife features of it which is contrast to finding of many studies.

The study clearly shows that there is a different opinion on entrance fee in relation to proximity factor such as residential areas. Since visitor who come from Chumphon province have a higher level of sensitivity to the price change compare with the group of

visitor who live in Bangkok which have to travel much further away to reach MCNP. Moreover the variables in term of ages and education also have an influence on visitor perception regarding entrance fee issues. As the finding indicated that visitor with higher education are not bother with the entrance fee factor as much as visitor with lower education in other word visitor with lower education and younger ages are more sensitive to the pricing issues.

The study of visitors' willingness to pay suggested that people were more willing to pay when they think that the conservation effort of the purpose project has a high chance to be successful. As for socioeconomic variable that affect the WTP, we found that income have no significant impact on WTP but age and origin of visitor do have an effect on visitor WTP. With the older visitor seems to show a greater WTP than the younger visitor and visitor who categorized as the rest apart from Chumphon were also have greater WTP than visitor from Chumphon. These was support by the result mentioned above that visitor from Chumphon have a higher price sensitivity than visitor who come from other part of the country.

The study also interestingly revealed that people who anticipated that the areas would be degraded in the future in such a level that they don't want to return; would likely to reject the payment for the project. This is contradicting to our assumption that people who anticipated high degradation level would be more willing to pay for preserve the park. These unexpected result can be interpreted in many ways such as visitor might think that "with or without the project the degradation will occur anyway" or it can be interpreted as well as "why should I be paying if I'm not coming back anyway". However consider the certain level of ambiguity and confusion of the question which has been raised by visitors during the interview. We believe it's worth looking into more detail for the future study in order to understand more about this behavior or perception from visitor. From the study, we can concluded that visitor WTP is greatly depend on the confidence level of visitor on the propose project and can also be influence at some certain degree by various socioeconomic factors such as ages, occupation, income and residential areas etc. These also support by the finding of many past CVM studies which stated that the result gain from CVM studies many time likely to subject with hypothetical bias(Cumming et al., 1997; Diamond and Hausman 1994) this indicated that CVM study is highly depend on how respondent perceive the propose hypothetical situation.

Despite existing methodology and study that has tried to better understand relation between visitor and environmental impact, there is still much to learn. Since one of the most important factors, and the primary source of impact is human activities. People or more specifically, recreationists hold a wide variety of beliefs, values and expectations regarding environmental attitude, recreation, and other natural components. Human-dimensions study gives an opportunity to investigate the underlying components that influence behavior, as a result can help identifying suitable management solutions for manager at MCNP. By integrating human-dimensions study into a management framework planned to address visitor impact related issues, managers then can better understand with the current problem and the challenges that lie ahead. Hence a combination of sociological and biological data on visitor impact is very important for an informed decision maker (Manfredo and others, 1995).

5.2 Recommendations

The low level of awareness in which visitor understands that they can't cause any impact to MCNP together with the conflict behavior shows in this study should raise a level of concern to the manager at MCNP. Since this suggests that visitor impact behavior could be intensifying when the number of visitors increases in the future.

For national park in Thailand, visitor often exhibit impact behaviors unintentionally and often claim to the officer that they don't realized that what they're doing is inappropriate or against the regulation. It's therefore very important to provide visitors with enough information and education. At the moment there is a lack of information regarding the rules and regulation at MCNP and for that reason MCNP should provided more sign of information to educate visitor about misconduct behavior such as wildlife feeding, stepping on the coral reefs and garbage sign etc. in the targeted area which visitor can "clearly noticed" the information apart from the educational sign of information. Apart from that the presence of national park officers or rangers at MCNP also can help reduce impact behavior from visitor, as they can provide information to visitor regarding the impact behavior and can as well give caution to visitor who exhibited misconduct behavior inside the park. However, this required a well trained ranger with high commitment and high financial cost to develop human resources as well.

It is important to point out that recently, at KYNP the problem of misconduct behavior from visitor has been escalated to such a high level that the Chief of Khao Yai National Park has to initiated a new protocol by giving every visitor a booklet of information regarding the rules and regulation inside national park before visitor entering to the park. So that when any visitor display misconduct behavior on site the ranger can enforcing the rule immediately without any excuses from the person. Since the chief of national park stated that the ranger normally can't enforcing the rule to visitors as they always claim that they're not providing with the information and therefore don't realized their wrong doing. The implementation of this initiative clearly shows a problem in enforcing the rules in national park, not only at KYNP but in case of MCNP as well, as a few number of visitor also mentioned the lack in enforcement of regulation within the park during the survey. Misconduct behavior at MCNP in term of wildlife feeding, especially problem of feeding marine animals should also become a concern issue to the manager since many visitors like to feed marine animals with foods. It's almost impossible for the rangers of any national park to keep monitoring every visitor action inside the vast area of the park, so the plausible way to cope with misconduct behavior is again through giving education and enough information to visitor. MCNP manager could also used visitor as a source of information or impact spotter for instance by setting up a short environmental evaluation survey sheets and allow them to participated in an evaluation during the time their spend inside the park. This kind of simple program has been taken for granted by many park managers in Thailand, which proven to be very effective and helpful in improving visitor participation in the conservation effort and create the sense of belonging in a common resources as a result make visitor feels more protective towards the natural resources they share within the park.

While the study about visitor impact of national park in Thailand has been significantly improve in the last decade. However there were some important issues worth taking into consideration. First, most of the visitor impact studies have emphasized mainly on the past or current condition of presence impact within the park. These had indicated that most study and management approach in the context of visitor impact considered of being

reactive towards problem and lack of long term planning. The results of the study usually used in coping with current impact problems rather than anticipate the foreseeable impact that could be prevent in the future. The lack of proactive planning approach came along with an issue of facilities development inside the park areas to serve a high demand of visitor. These issues nowadays become a major discussion and concern since the increase of visitor number in many national parks had prompted the demand for more facilities building. As a result, developments in various kinds of infrastructures and facilities have been constructed inside national park area without well thought-out planning and proper environmental impact study. The study also shows that national park manager at MCNP will likely have to face a similar challenge when the number of visitor increase to some degree which will demand to construct more facilities to support visitors. In case of MCNP, the chief of MCNP has already mentioned about a new plan of constructing a new NP branch office facilities on one of the islands of MCNP. While this plan is still in a study process of finding a suitable island for the development with the habitable element such as having fresh water supply on the island, location etc. However, the plan to development new facilities in one of the island might have a counter effect on MCNP as the study conducted on recreational impacts often found that it's better to concentrate the use to particular areas rather than spread it to a larger area, as the relationship between level of impact and use is curvilinear (Hammit and Cole, 1998; Kangas et al., 2007). Moreover MCNP also plan to attract more visitors by promote the diving activities as there are many great dive sites inside the park areas which is still not well recognized yet among mainstream tourist compare to other famous diving location. Although, this presents more income from tourism opportunity for the park, we believed that it's essential for the park to first conducted the biological study such as species record of the diving area and also set up a planned to manage and control visitor impact behavior by set a strong rules and regulation or better than that MCNP should limit the number of visitor on the diving areas and implementing the user fee for diver as a way to control visitor number and minimize the impact to the park. All of these should be plan and implementing before promote the diving area to the mainstream public.

Many impact studies normally have been carried out over a short period of time; while some study like bio-physical impacts require long-term monitoring program in order to gain an overall understanding. Within that reason MCNP should have a long term visitor impact monitoring program in the vulnerability areas which are highly expose to tourists such as mangrove forest areas, Koh Mattra, Koh Lawa, Koh Lak Rad etc. which are the prime areas for visitor to enjoy various kinds of recreational activities. The monitoring program would help in case if there is any impact occurring to the environment, the change in ecological condition can be detected first at the early stage and the cause of the impact need to be identified for further management and action plan. The monitoring program possibly can be jointly done with third party like research institute or university as this will help MCNP to create a learning network and platform for research and study in the future. It's very vital for MCNP to conducted the studied and gather both sociological and biological data at this stage where the environmental state of MCNP still has little impact from tourism development.

Moreover, we found that the research community in the context of visitor and national park were quite cluster among the famous national park destinations which support by the fact that there were rarely any studies has been conducted at MCNP in the past. Possible future study centre on visitor behavior and economic valuation at MCNP could also being done in many areas such as recreational resource valuation, valuation on mangrove forest or coral

reef etc. Plus, the studies present in this paper can also serve as valuable reference source for future study related to visitor perception or economic valuation.

In conclusion, the information of visitors' perception from this study should present valuable information for manager to understand more about visitor behavior at MCNP. Thus present a good opportunity for a better management plan for MCNP especially on visitor impact related issue in the future. In addition, we believe that the most challenging aspect for MCNP manager should not be centrally focus on how to attract more visitor number to the park since with all the elements of natural features the park had to offer, sooner or later tourist will eventually find their way to the site. The main focus for manager should lie on protection and conservation of the park and not compromising these core values too much for the pressure from tourism development. We recommend that MCNP and NP in Thailand should adopt the Limits of Acceptable Change (LAC) framework which is an alternative implementation of carrying capacity concept. Carrying capacity although has been implemented and mentioned widely in NP of Thailand as an ultimate method to eradicate visitor impact issues. However the method has proved to be inadequate to cope with the complexity found in visitor impact situations and often fails in limited the high level of impact to the NP. For that reason LAC concept can provide a better management approach as it focuses the planning and management base on desired environmental and social condition in which present conditions are continuously monitored. Instead of asking "How many is too many?" LAC simply asked "What conditions do we desire and how to achieve and maintain such desire condition?" (Stankey *et al.*, 1985; Boyd and Butler, 1996). *Note that in this paper we will not discuss in detail about LAC framework.

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Appendix 1

Questionnaire on “Visitors’ perception of environmental impact in Mu Ko Chumpon National Park, Thailand”

This survey is part of a study on the environmental impacts of tourism in Mu Ko Chumpon National Park. The purpose of this questionnaire is to investigate about visitor perception and concern regarding environmental issues of the park. This survey consists of questions about your recreation activities during this visit, your observations of environmental impacts in the park, your valuation toward the recreational resources, and other relevant questions about visitor and park management issues.

We are greatly appreciating your responses to the questions in this survey. There are no correct or incorrect responses; we are merely interested in your point of view.

We hope that the results of this study will help contributing for a better development of Mu Ko Chumpon National Park in the future.



Thank you for your kindly participation,

Pisit tuntipisitkul,

Asian Institute of Technology (AIT)



- Please, Read the questions with care.
- Answer to the questions personally by ticking in the(☐).Where it is possible to choose more than one alternative, place your ticks in the response squares. In some of the questions, you can write your answer in the space reserved for it.

**** There are no correct or incorrect responses; we are merely interested in your point of view. Thank you for your participation. ☺**

1. Have you ever been to Mu Ko Chumporn National Park before your visit today?

☐ Yes, (How many times?)times ☐ No, this is my first time

How many days do you intend to stay in the park? days

2. During this trip, what activities have you engaged in (please check all activities that apply)?

- ☐ Sight seeing ☐ swimming ☐ Nature education ☐ Photography ☐ Kayaking
☐ Scuba diving/ snorkeling ☐ trekking ☐ Camping/picnic ☐ wildlife watching
☐ others, please specify.....

3. Please rate the level of importance of these factors to your visit at MCNP by giving 1-5 (5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1 = not important at all).

- ___ Close to nature
___ Observe/encounter wildlife
___ Learn about nature
___ Scenery
___ Break from routine

4. Which part of the National Park did you visit or do you intend to visit? (Select more than one alternative if applicable.)

- ☐ Mangrove forest areas ☐ Sea and Beaches ☐ Islands around national park

5. Based on your opinion, please rate the overall level of the mangrove forest environmental condition of the park?

Very poor

Excellent

1 2 3 4 5

6. Based on your opinion, please rate the overall level of nature trail (in mangrove forest) condition of the park ?

Very poor Excellent

1 2 3 4 5

7. Based on your opinion, please rate the overall level of environmental condition of the park?

Very poor Excellent

1 2 3 4 5

7. Do you think your presence can have any negative impact on environmental condition of the MCNP?

☐ Yes ☐ No ☐ Maybe/not sure

8. Please name the 3 most obvious negative impacts from tourism that you noticed during your stay at MCNP? (If none leave it blank)

1..... 2..... 3.....

9. Do you think MCNP will face with visitor impact issue from tourism development in the next ten years?

☐ Yes ☐ No ☐ Maybe/not sure

Any reason why.....

10. What would be your best guess of the percent chance that the state of degradation of the park will be such that you will not come anymore to the park within the next ten years ?

☐ 0- 10 % ☐ 40- 50 % ☐ 80-90%
☐ 10- 20 % ☐ 50- 60 % ☐ 90-100%
☐ 20- 30 % ☐ 60- 70 %
☐ 30-40 % ☐ 70-80 %

11. From your perspective, Please name the 3 most concern tourism impacts issue in the future of MCNP. Please put in order of importance (1, 2, and 3)

1..... 2.....3.....

12. From your opinion, Should MCNP consider constructing additional visitors' facilities?

☐ Yes / pls provide what kind of facility (ex. accommodation, parking lot etc.)

.....

☐ No ☐ Maybe

13. Will you plan to comeback to visit MCNP in the future?

☐ Yes

☐ No Why..... ☐ Maybe/not sure

14. Please assess current visitor management issues in Mu Ko Chumpon National Park by circling the number that best describes your opinion.

1 = very dissatisfied, 2 = dissatisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

| Visitor management issue | Level of satisfaction | | | | |
|---|-----------------------|---|---|---|---|
| 1. Providing visitor education programs | 1 | 2 | 3 | 4 | 5 |
| 2. Strict enforcement of rules concerning improper conduct or behavior | 1 | 2 | 3 | 4 | 5 |
| 4. The number of park rangers is sufficient | 1 | 2 | 3 | 4 | 5 |
| 5. Sufficient garbage bin provided in the park areas | 1 | 2 | 3 | 4 | 5 |
| 6. Maintenance of facilities within the park such as trail, sign, building etc. | 1 | 2 | 3 | 4 | 5 |
| 7. Recreational services and activities provided within the park | 1 | 2 | 3 | 4 | 5 |
| 8. Cleanness and hygiene of the park areas | 1 | 2 | 3 | 4 | 5 |
| 9. Providing useful learning material such as board, sign inside the park areas | 1 | 2 | 3 | 4 | 5 |
| 10. Overall evaluation of management practices | 1 | 2 | 3 | 4 | 5 |

15. Do you have any recommendation for improve the management of the park at MCNP?

.....

16. Would you recommend any rule or regulation that MCNP should have considered to be implementing?

.....

| |
|---|
| Part2: Valuation of services and resources of MCNP |
|---|

*****Information from this survey will not to be used in any pricing policies for the entrance fee of the national park. The objective of this survey is to estimate the economic value to society from recreation resources and service in the MCNP and to obtain demographic and socio-economic information.***

Visitors spend considerable amounts of money and time for traveling to the destination of their choice. It is reasonable to assume that the amount of money you are willing to spend for a recreational experience depends, among other things, on the quality of the experience you expect.

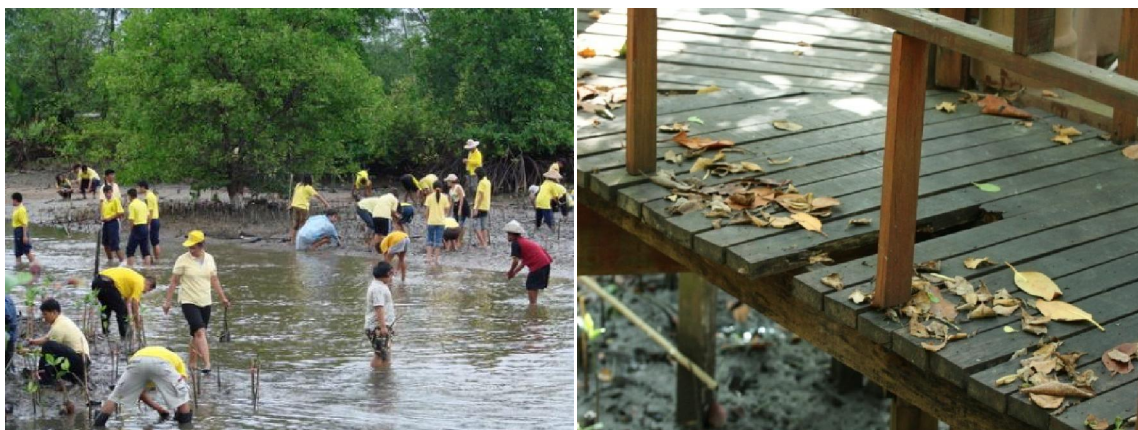
Please rate: How concerned are you about the environmental impact problem at various tourism destination in Thailand?

| | | | | |
|------------|-------------|--------------------|-----------|--------------|
| 1 | 2 | 3 | 4 | 5 |
| not at all | very little | somewhat concerned | concerned | very concern |

Since it does cost money to maintain or improve the environment, we would like to gain an estimate of how much a good natural environment is worth to you.

First, let's assume that visitors to the MCNP are to finance the environmental protection and improvements of facilities by paying an entrance fee to be admitted into the recreation area. This will be the only way to finance such improvements in the area. Let's also assume that all visitors to the area will pay the same fee as you, and all the money collected will be used to finance the environmental protection and improvements of facilities.

The environmental protection and improvement of facilities would consist of mangrove forest plantation project and monitoring, fixing the nature trail and learning material such as sign, board along the trail.



1. Would you be willing to pay an additional\$ to the current entrance fee of MCNP in order to prevent the degraded condition of mangrove forest by supporting the mangrove plantation and monitoring project and maintenance of nature trail in mangrove area of MNCP?

☐ Yes ☐ No

2. Did you refuse to pay an additional xx for entrance, because:

- ☐ The damage is not significant
- ☐ It is unfair or immoral to expect the visitor to have to pay the costs of preventing the damage
- ☐ Other _____

As mentioned earlier that the state of the environment of the park could be degraded and we have proposed a program of maintenance of the park would be put in place to correct this.

3 .Could you circle on the number below how sure you are the program to maintain the park is likely to be successful? (1 : very unsure, 5 : very sure)

1 2 3 4 5

4. How important are national parks for you recreation? (5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1 = not important at all).

1 2 3 4 5

5. How important do you consider each of the above attributes with respect to enjoyment of your stay in the national park? (Please answer to each of the alternatives.)

(5 = very important, 4 = fairly important, 3 = somewhat important, 2 = of little importance, 1 = not important at all).

| | | | | | | |
|--------------------------------|----------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| Nature and Ecology | Very important | <input type="checkbox"/> ⁵ | <input type="checkbox"/> ⁴ | <input type="checkbox"/> ³ | <input type="checkbox"/> ² | <input type="checkbox"/> ¹ Not important at all |
| Small Number of visitor | Very important | <input type="checkbox"/> ⁵ | <input type="checkbox"/> ⁴ | <input type="checkbox"/> ³ | <input type="checkbox"/> ² | <input type="checkbox"/> ¹ Not important at all |
| Free entrance into the park | Very important | <input type="checkbox"/> ⁵ | <input type="checkbox"/> ⁴ | <input type="checkbox"/> ³ | <input type="checkbox"/> ² | <input type="checkbox"/> ¹ Not important at all |
| Recreation activities | Very important | <input type="checkbox"/> ⁵ | <input type="checkbox"/> ⁴ | <input type="checkbox"/> ³ | <input type="checkbox"/> ² | <input type="checkbox"/> ¹ Not important at all |
| Facilities provide in the park | Very important | <input type="checkbox"/> ⁵ | <input type="checkbox"/> ⁴ | <input type="checkbox"/> ³ | <input type="checkbox"/> ² | <input type="checkbox"/> ¹ Not important at all |

6. How many trips did you take during the past 12 month ? _____

Among those travels, how many times

To a beach destination: _____ times

To a National park destination: _____ times

Others: _____ times

7. How often do you read news about environmental issue?

☐ Once a week ☐ 2 or 3 times a week ☐ almost everyday ☐ monthly basis

☐ hardly ever

8. How often do you spend free time in nature?

☐ Once a week ☐ 2 or 3 times a week ☐ almost everyday ☐ monthly basis

☐ hardly ever

9. What is your current age?

☐ Below 18 years ☐ 18 to 24 years ☐ 25 to 30 years ☐ 31 to 40 years ☐ 41 and above

10. What is the highest level of education that you have completed so far?

- ☐ Elementary school ☐ High school
☐ Vocational education ☐ Undergraduate
☐ Graduate / or Doctorate

11. Your residential location

- ☐ West of Thailand
☐ North of Thailand
☐ Central of Thailand or ☐ Bangkok
☐ Northeast of Thailand
☐ South of Thailand or ☐ Chumpon
☐ East of Thailand

12. What is your occupation?

- ☐ Civil servant ☐ Student ☐ Business owner ☐ Private employee ☐ Retired
☐ others.....

13. What is your monthly income?

- ☐ Not more than 10,000 Baht ☐ 10,001-15,000 Baht
☐ 15,001-20,000 Baht ☐ More than 20,001 Baht ☐ For student with no income

Appendix 2

| |
|---|
| Check list for interview with NP officer |
|---|

1. Your job position in MCNP
2. How long have you been working at MCNP?years or month
3. Please briefly describe your current job and working experience in MCNP.
4. Please describe current tourism/visitor management issues in MCNP.
5. What are the major tourism sites or destination in Mu Ko Chumpon National Park?
Please provide names.
6. What is the concern issues regarding visitor and tourism development of MCNP both at the present and in future?
7. Any future plan for visitor or tourism development for MCNP?

Appendix 3

Pictures of study site: Mu Ko Chumphon National Park



Kayaking service area at MCNP



Educational trail (nature trail)



Head office building of MCNP



Accommodation areas



Check point for Entrance fee collection



Visitor Learning center at MCNP



Parking area of MCNP

Some illustrations of broken facility in MCNP



Learning board need maintenance

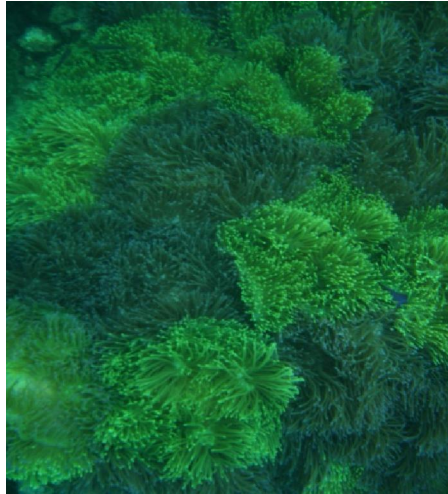


Example of broken trail in MCNP

Some important flagship species encounter during observation survey at MCNP



Giant clam



Sea anemone



Dusty leaf monkey



Kingfisher